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The Oil Man's Calendar

APRIL 9-10	American Petroleum Institute, Eastern District, Pittsburgh.
16-17	National Petroleum Association, Cleveland, Ohio.
21-23	Southwestern Gas Measurement Short Course, Norman, Okla.
21-24	American Association of Petroleum Geologists, Denver, Colorado.
22-24	Petroleum Industry Electrical Association, Shreveport, La.
MAY 13-15	Natural Gasoline Association, Mayo Hotel, Tulsa. A.P.I. Mid-Year Meeting Canceled.
OCT. 8-10	Texas Mid-Continent Oil & Gas Association, Dallas.
NOV. 9-13	American Petroleum Institute, Chicago.

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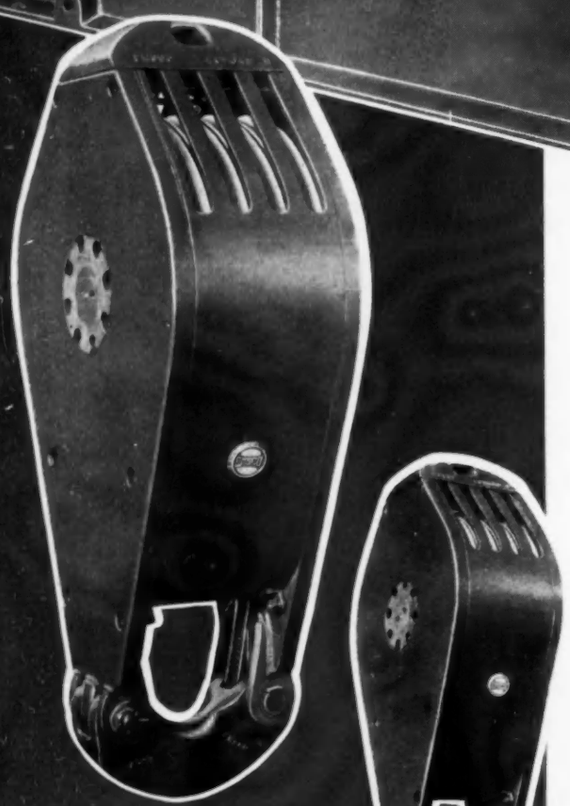

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The Changing Panorama

March a Month of Drastic Shrinkages

WITH the full impact of war influences striking the industry squarely between the eyes, oil experienced exceedingly drastic shrinkages of drilling, producing and refining operations in March, which were in direct contrast with the steady expansion that characterized these activities during 1941. Although being called upon to produce enlarged quantities of strictly military products, the immediate outlook is for continued reductions in oil activities as civilian consumption and shipping troubles multiply.

Drilling operations have declined so sharply that unless checked at their current level, the industry will not complete the 19,300 wells the recent OPC study stated was necessary to maintain the country's productive capacity. Whereas in December the industry was completing 613 wells weekly, the level fell to 551 in January, to 530 in February, and then tumbled to only 360 in March. Due to the higher rate in the first two months of the year, total completions, including both exploratory and development wells, amounted to almost 6200 during the first quarter of the year, or considerably in excess of the OPC figure. But only 330 wells were being completed weekly during the last half of March, indicating that April drilling may be in the neighborhood of 300 completions per week. Despite the surplus built up during January and February, the latter rate for the remainder of the year would leave the industry short of the number OPC thinks necessary.

The crude-oil-producing rate, which during December, January and February had averaged 4,125,000 barrels per day, was curtailed to an average of about 3,885,000 barrels daily during March and according to OPC allocation is to dip to 3,500,000 barrels in April. Thus current indications are that the industry's production of crude oil is to be below the 1941 level. If the April rate of production is maintained for the remainder of the year, 1942 output will be 1,260,000,000 barrels in contrast with 1,400,000,000 barrels in the preceding year.

Crude runs to stills were reduced nearly as much as crude production, but even at the March level of 3,550,000 barrels per day, gasoline continued to go to storage because of sharp curtailment of automobile travel. Only in the case of heavy fuel oil is expanded consumption indicated; stocks of that commodity declined 12 million barrels during the first three months of the year.

Priorities to Give Way to Allocations

THE long anticipated shift from the cumbersome Priorities System to a method of materials allocation is promised in an announcement last week from WPB. A specific requirements approach to the control and distribution of scarce materials will replace the use of the blanket priority rating orders as rapidly as the necessary new orders and procedure can be put into effect. It is expected that between April 1 and June 30, most of the blanket rating orders (P orders) will be revoked or allowed to expire and companies operating under these orders will be required to apply for priority assistance under the Production Requirements Plan.

It will be remembered that Amended Preference Rating Order P-98 for the oil industry will expire May 15.

The Production Requirements Plan is designed for use of equipment manufacturers where a company makes a single application for priority assistance covering all of its estimated materials needs over a three-month period. The applicant must submit full information as to his inventories, the end use of his products, etc. How an oil company or operator will secure his equipment from the manufacturer is not indicated but it is assumed that this matter will be handled largely by the equipment manufacturer with his customers.

PRP is not new or untried. The plan was announced early in December and a considerable number of companies have been operating under it since January 1. PRP itself grew out of the old Defense Supplies Rating Plan, which was first announced nearly a year ago.

Extension of PRP to cover a much broader field, and its substitution for "P" orders, will, according to WPB, constitute another long step toward gearing the whole American economy into the war program. When the changeover is completed, priority assistance will be granted only for specified quantities of materials or products, and WPB then will be in position to go far toward complete allocation as war needs may require.

Specific announcements will be made in each case as additional industries are brought into the new program.

Wildcatting Below OPC Suggestion

UNLESS there is a very material expansion in wildcatting activity, which appears unlikely, 1942 will see completion of far fewer exploratory tests than OPC's recent study indicated was necessary to discover sufficient new reserves to maintain the country's productive capacity.

Currently there is no indication whatsoever that the industry will anywhere near approach the 30-percent expansion in wildcat drilling recommended by OPC for the year, the present rate being far below that level and still decreasing. During the first quarter of 1942 only about 650 wildcat tests have been completed. This is at an annual rate of about 2600, in contrast with 4000 wanted by OPC, and consequently represents a shrinkage from the 3113 wildcats completed in 1941 instead of an enlargement. Furthermore, wildcat drilling operations are currently declining sharply from the level prevailing in preceding months, having fallen from an average of 61 per week in January to 50 in February and to somewhere near 40 per week during March. Consequently, it appears that but about 50 percent of the OPC wildcat program will be achieved by the in-

dustry. (Last week THE OIL WEEKLY inaugurated a new statistical feature, which shows the number of wildcat completions by states along with number of total completions. See lead page of "U.S. Field Operations" section.)

Of even greater significance is that statistics indicate the industry is not going to be as successful in finding oil as anticipated by OPC. Whereas the OPC breakdown on estimated required drilling volume anticipated that 15.6 percent of the wildcats completed would produce oil, so far this year only 11 percent of the wildcats have been productive of oil. At the current rate of wildcat drilling and the current rate of finding oil, only about 225 successful tests (exclusive of gas) may be the result for the year in contrast with OPC's quota of 624.

The Important Duty of A Single Tankship

EVERY tankship sunk, or transferred away from the Gulf-to-East Coast service, means that nearly 100,000 passenger cars, or 35,000 domestic oil burners, on the Atlantic seaboard, have to get their motor fuel or heating oil by some other transportation means, or that all users have to share and get along with a little less.

The average tankship on East Coast routes in 1940 carried 80,000 barrels of petroleum or products, and made a round trip to the Gulf or to the Caribbean in 20 days, delivering therefore about 4000 barrels a day. The 1,500,000 barrels, or 63,000,000 gallons, carried in a year by one tankship is about equal to the annual consumption of 100,000 passenger cars at 650 gallons each, or of 35,000 domestic oil burners at 1800 gallons each.

The effectiveness of the average tankship was increased during the last half of 1941, when economical operating methods were discarded, loading and unloading were speeded up, and tankships were allowed to load heavier, by Congressional action, to meet the threatened deficiency. Since the sinkings on the East Coast began, however, it is probable that their operating effectiveness has been curtailed materially, if convoying or other time-consuming safety measures have been adopted.

Stop Gas Waste for True Conservation

THE industry can solve its conservation problem by solving its gas-waste problem. Through proper completion, withdrawal rates and formation reinjection the industry can do this. "Keep Gas in Solution" should be the first through the tenth commandment for all oil engineers. The industry through voluntary efforts or action of state regulatory agencies, should adopt a program of limiting gas-oil ratios to a 100 percent tolerance of the quantity of gas in solution with the oil. Since crude oil usually contains an average of 800 cubic feet of dissolved gas, this would restrict gas-oil ratios to 1600 feet per barrel of production.

This constitutes the conservation platform laid down for the industry last week by E. L. DeGolyer, director of conservation for OPC.

Former Army Engineer Endorses Barge Idea

CONTINUED success of Axis submarines in sinking American tankers has added support to the proposal of large-scale building of barges and towboats for shipping oils from the Southwest to the East Coast via the Mississippi and Ohio Rivers.

An impressive endorsement of the suggestion was that given last week by Major General Lytle Brown, retired, former chief of United States Army Engineers, in a letter to Chairman Donald M. Nelson of the War Production Board.

"In my opinion," said he, "the most feasible plan for supplying the East with oil is to send tankers up the Mississippi to Baton Rouge, Louisiana, and then transship it by barges and towboats to Mid-West and Eastern inland ports.

"From these cities, such as St. Louis, Cincinnati, Pittsburgh and others, the oil could be distributed by a fleet of rail tank cars to any point in the country."

Brown stated that he made a study of the Atlantic coastwise shipping problem in 1935-1936, when he was commanding officer of the Panama Canal Zone Department, and that he formed the opinion that the Atlantic coastline was virtually indefensible from submarine attacks.

"All that a submarine has to do is lie in wait where our tankers have to pass," he wrote.

As far back as several weeks ago, THE OIL WEEKLY was urged to lend its influence toward construction of barges and towboats as a partial solution to the East Coast oil shortage. Unwilling to endorse the idea except in so far as it had merit, but glad to be of any possible assistance in dealing with the transportation problem, we investigated the barge situation and the practicability of increasing barge shipments. Comprehensive information was assembled on the subject, with cooperation of representatives of barge-line companies, marine departments of oil companies, the inland-waterway systems, editors of several shipping and boating journals, and others. The information was published in the March 23, 1942, issue, page 13.

Any substantial increase of the oil movement to the East by barges will require construction of barges and towboats. Barges and towboats of steel would be preferable, but they could be made of wood, especially if improvements in construction methods were employed.

Furthermore, even if made wholly of steel, the barge facilities would be "bargains" in providing oil-carrying capacity to the East, from the standpoint of the use of steel, barge-line operators claim. Barge facilities require much less steel than a pipe line, they say, in providing a given carrying capacity between two points. Shipping by barge is less costly than by rail and it is competitive with pipe lines. Under present high tanker rates and increased war-risk insurance on tanker shipping, barging is competitive even with that form of oil transportation, which normally is cheapest of all.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

By B. F. LINZ
Washington Correspondent

DEPLETION and monopoly were the major oil subjects of discussion in the Capital this week.

As the House Ways and Means Committee completed its hearings on the depletion provisions of the revenue code, the Department of Justice announced the freeing of Standard Oil Company synthetic-rubber patents by court action.

The need for retention of the depletion allowance if oil supplies adequate for the winning of the war are to be maintained was presented to the committee by a group of industry witnesses, who left the hearings convinced that they had put their point across and that the committee would reject the Treasury's proposal to eliminate the allowance.

For Details on Depletion Fight See Page 14

OPA Grants Price Increases for All Eastern Products

Industry Expected to Win Depletion Fight

Consent Decree Releases Synthetic Rubber Patents

☆ ☆ ☆ ☆

Fines of $5000 were imposed upon seven Standard companies of the New Jersey group and subsidiaries and three officials in a consent-decree settlement of suits to break the cartel agreement between the parent Standard Oil Company (New Jersey) and the German chemical trust, freeing, for use without royalty, important patents for the production of synthetic rubber.

Appearing before a Senate investigating Committee following the action, Thurmond Arnold, Administration "trust buster," charged that the great oil company had been under the domination of the German organization and had turned over to it the recipe for making a better and cheaper rubber than Germany had developed, while refusing to permit the use of that recipe in this country.

Prices also entered the picture in a big way during the week when, in a series of actions, the Office of Price Administration refused to equalize prices of Panhandle crude with those of Oklahoma and Kansas oils, gave a 25-cent-per-barrel increase to Pennsylvania-grade producers with promise of another raise later, and authorized increases in retail prices in District 1 of one half cent per gallon for gasoline, four tenths cent per gallon for light heating oils and 20 cents per barrel for residual fuel oil.

As OPA compensated eastern suppliers for the increased costs of rail transportation, the supply situation along the Atlantic Seaboard became increasingly more serious. Coordinator Ickes met during the week with New England officials seeking relief from a near-famine situation, and the OPC staff put in even more overtime than usual in desperate efforts to get more oil into the territory.

OPC officials had little hope of any marked improvement in the situation in the near future. Rationing of oils next winter now seems inevitable for New England, at least, and possibly other sections of District 1, and the resulting increased demand for coal may overtax the transportation facilities and necessitate rationing of that fuel as well.

In a drive to increase East Coast fuel oil supplies by a million barrels a week over the next five weeks, OPC on March 27 ordered alteration of refining operations in District 1 from that date until April 30 to increase the yields of heavy fuel oil and reduce the output of gasoline; the delivery of 2,000,000 barrels of heavy fuel oil by tank car from District 2, and the loading of 1,000,000 barrels by tanker from District 3 in addition to cargoes already scheduled.

Over the week-end additional orders were issued, calling on the industry in District 2 to reorganize its transportation facilities and take a number of other steps so as to increase the supply of oil products which can be directed toward the seaboard. To do this, some pipe lines will have to be reversed, supplies pooled and other actions taken in the district that have already been taken in District 1.

The OPC orders followed meetings of the general committees for Districts 1, 2 and 3 with coordinator's officials over a three-day period. They provided, among other things, for the withdrawal for distribution of all stocks of heavy fuel oil in the hands of consumers in excess of their immediate requirements; the raising of the gravity of heavy oil in storage at refineries by the addition of lighter oils; the alteration of refinery operations and the additional deliveries from Districts 2 and 3.

More Money for Bureau Oil and Gas Research

Carrying his precepts of conservation to his own department, Secretary of the Interior Ickes this year voluntarily cut more than $75,000,000 from the fund needed for operation, only to have a further cut of more than $17,000,000 made by the House Appropriations Committee when it reported the Interior Department supply bill for the fiscal year 1943.

The bill provides a total of $162,-

634,845 for the coming year, of which $79,000,000 is for the reclamation service and $28,000,000 for the bureau of Indian affairs, compared with $238,101,280 for the current year.

An outstanding exception to the general curtailment of funds was in the Bureau of Mines, to be given $8,405,290 for the coming year against $8,390,370 for 1942, the Appropriations Committee in its report disclosing that it feels the bureau is so important to the war effort that few reductions were considered. The amount allotted, however, is $76,000 less than the budget estimates.

Funds for the bureau's oil and gas investigations are to be increased from $260,000 to $368,100.

Appearing before the committee during its hearings on the bill, R. A. Cattell, chief of the petroleum and natural gas division, explained that the increase in funds is needed for four important projects, two of which were requested by the petroleum coordinator.

One of these projects extends the survey made last year of crudes suitable for the manufacture of aviation gasoline to the testing of blends of the base stocks from various suitable crudes with the blending agents that are used to make aviation gasolines to determine how the available resources may be used most effectively. The second project calls for studies of fields of the condensate type which are most promising sources of base stocks and volatility agents for aviation gasoline.

The other projects are to assist in the production of Pennsylvania-grade crudes for the manufacture of aviation lubricants, and the fourth is to provide guard service for the experimental station at Bartlesville, where buildings and equipment could not be replaced for less than $1,000,000.

To Build 56 Tankers On Pacific Coast

Contracts for the building of 56 more tankers were announced March 25 by the Maritime Commission.

The ships are to be built by The Kaiser Company at a new shipyard now under construction at Swan Island, Oregon. They will be 503 feet long, with a 69-foot beam.

Consent Decree Releases Rubber Patents to All for Duration

On the eve of an investigation by the Truman Committee of charges that large oil companies were seeking to control synthetic rubber production, the Department of Justice on March 25 announced it had filed a complaint and a consent decree in the Federal District Court in New Jersey involving alleged violations of the anti-trust laws by seven companies and seven individuals.

Involved in the action were Standard Oil Company (New Jersey), Standard Oil Company of New Jersey, Standard Oil Development Company, Standard Oil Company of Louisiana, Standard Catalytic Company, Jasco, Inc.; Hydro Engineering and Chemical Company, Walter C. Teagle, W. S. Farish, Frank A. Howard, O. L. Young, William E. Currie, Walter Schaefer and Harold A. Koechling, the last four being sued only as trustees in a civil action.

With submission of the consent decree the defendants pleaded nolo contendere, and the seven companies and Teague, Farish and Howard — named in the criminal information—were fined $5000 each.

Because Assistant Attorney General Thurman Arnold and members of his anti-trust division staff were due to appear before the Senate committee the following day, the department did not disclose the details of the case, but explained that the government charged that defendants conspired with I. G. Farbenindustrie, the German dye trust, to restrain trade and commerce in the oil and chemical industries throughout the world, including synthetic rubber and synthetic gasoline.

The consent decree, it was said, provides for the free public licensing for the duration of the war emergency of all existing patents owned by the defendants and all I. G. patents over which they have control, required for the synthetic production of gasoline and rubber. In addition, numerous other chemical products manufactured from a petroleum base and processes for the refining of petroleum are subject to compulsory royalty-free licensing.

After the termination of the war emergency the defendants will be permitted to charge a reasonable royalty on their patents.

In issuing licenses on a royalty-free basis, complete know-how and technical information required for the use of the patents is to be provided.

The defendants, further, are enjoined from hereafter entering into any plans or program with the I. G. save upon giving contemporaneous notice to the Department of Justice.

"It is the belief of the Department of Justice that a direct result of this decree will be the freeing of all the synthetic rubber patents at present in this country, which originated with the defendants or with I. G., upon a royalty-free basis to any American manufacturer who wishes to produce synthetic rubber. This covers both Buna and butyl patents," the department said.

Standard "Too Busy on War Work to Fight"

In a formal statement, Standard Oil Company (New Jersey) said the Government contended that contracts it made with I. G. beginning in 1929 and certain agreements and practices which have grown up under them tended to restrain trade; that it disagreed with that contention, but that it was too busy with war work to fight.

"The company realizes that to obtain a vindication by trying the issues in the courts would involve months of time and energy of most of its officers and many of its employes," it was declared. "Its war work is more important than court vindication."

The interests of I. G. in the contracts and patents involved, it was said, have been taken over by the Alien Property Custodian, who consented to the entry of the decree.

Under the agreements which it made with I. G., Standard paid approximately $30,000,000 for con-

trol and an 80-percent net interest in the hydrogenation process, together with an 80-percent interest with full control outside of Germany of all other refining processes which I. G. owned or might develop up to 1947. In return, Standard gave the Germans an option on a controlling interest in any invention which it might make in the purely chemical field unrelated to the oil industry, while in the field of processes which either might develop for the production of chemicals from oil, the originator was to have five eighths interest with full control and the other party three eighths interest.

From this deal has come processes for making 100-octane gasoline, toluol and synthetic rubber and the "fluid catalyst process."

Arnold Says Cartel Was To Protect Monopoly

Appearing before the Truman Committee investigating national defense activities on March 26, Arnold charged that Standard's sole objective in entering into the cartel agreement was its desire to protect its monopoly over the synthetic-rubber industry and that it had refused to make available its development of butyl rubber to the Navy even after the Japanese attack on Pearl Harbor.

Standard's activities, he alleged, have been the principal cause of the present shortage of synthetic rubber, but, he added, the company did no more in this line than have other large concerns seeking to dominate other industries.

Wanted World Monopoly

"The Standard Oil Company wanted a world monopoly in oil and synthetic gasoline," Arnold said. "I. G. Farben was interested in chemicals. Each gave the other a world monopoly insofar as they were able to convey it, with the exception of Germany who reserved its own market in synthetic gasoline, while Standard gave Germany control of synthetic rubber in the United States."

Arnold represented Standard as under the domination of the German organization, refusing at its direction to license independent producers in the United States to produce synthetic rubber and turning over all its discoveries to Germany even though Germany declined to give anything in return.

"Standard delayed the use of buna rubber in this country because the Hitler government did not wish to have this rubber exploited here for military reasons," he asserted.

Production Stifled

"Not only was the production of synthetic rubber in this country absolutely stifled by Standard's adherence to the restrictions imposed upon it by I. G. Farben, which they always loyally observed, but after 1939 when Standard received permission to enter into negotiations with rubber companies, Standard proceeded further to retard the development of synthetic rubber because of its natural monopolistic desire to keep complete domination over the industry."

Arnold indicated that the ramifications of the cartel went far beyond synthetic rubber and that he would bring out the development in other fields of industry at subsequent hearings. He said he had submitted to the committee only 65 documents out of approximately 40,000 which had been studied by the department in the preparation of its suit.

The purpose of the suits, he said, was not to bring Standard into the limelight so much as to show how serious such a situation can be. He absolved the company of any intent of aiding the German government and said it was seeking merely to protect its own monopoly in the rubber field.

Completing his presentation March 27, Arnold told the committee that all agreements between American and foreign industries should be required by law to be registered, that research should be encouraged by the government, all patent-license agreements should be registered with full disclosure of terms and that the government should have the authority to take over patents in an emergency.

Arnold emphasized that the situation brought out in the Standard case was but one of many in which American industries were teamed up with those of enemy nations. "I wish to point out and emphasize that Standard Oil is a guinea pig in this situation," he said. "It does not stand out alone. This sort of thing was going on in a large number of American industries.

"Therefore, we would lose the point of this hearing if the committee simply denounced Standard Oil. We need Standard Oil, with its technicians and its organization, to help us win the war.

"By the consent decree that company has indicated its willingness to make restitution in the sum of millions of dollars and at the cost of its future domination of the industry. We may well be grateful to that company for putting its arrangements in writing and thus to furnish an object lesson of the results of international cartels."

To secure a complete picture of the situation, Senator Truman of Missouri, chairman of the committee, will call representatives of Standard Oil Company to testify within the next week or two.

Synthetic Rubber Output War's Number 1 Problem

Priorities superior to those granted on any other commodity, including 100 octane gasoline, should be granted to materials and chemicals essential to the production of synthetic rubber, a Senate committee was told March 24 by William L. Batt, director of materials for the War Production Board.

Appearing before the Truman Committee Investigating War Production Activities at the opening of public hearings, Batt declared that the Nation's rubber situation is "highly critical" but that the program for the production of 300,000 tons of synthetic rubber in 1943 and 600,000 tons in the following year can be achieved only if all materials necessary are made available without delay.

☆ WPB ☆

Blanket Ratings Will Be Revoked in June

Blanket priority ratings given the oil industry under Preference Order P-98 will be revoked by June 30 and companies which have been operating under those ratings will be required to apply for priority assistance under the Production Requirements Plan.

Plans to abolish all general priority rating orders were disclosed by the War Production Board last week. The general applications of the Production Requirements Plan, it was said, will give WPB closer control of distribution and use of all scarce materials. The changeover will be made gradually, how-

[*Continued on page 55*]

Industry Expected to Win Depletion Allowance Fight

By B. F. LINZ, Washington Correspondent

TREASURY recommendations for elimination of the present 27½ percent depletion allowance were seen headed for the discard last week after representatives of the industry, supported by a number of members of Congress, warned the House Ways and Means Committee that elimination would menace the supply of oil vitally needed for a long war without in the least benefiting the national revenues.

With 16 of the 25 members of the committee hailing from oil-producing states,. the industry's arguments were sympathetically received and little doubt was left that a majority of the committee would vote for retention of the allowance.

Sponsor Takes Up Fight

The fight against the Treasury recommendations was led off by Thomas P. Gore, blind former Senator from Oklahoma who in 1918 sponsored the original discovery allowance which in 1926 became the present provision, as a means of increasing the production of oil for the war then going on.

"It has worked," Gore declared. "For once a policy adopted by Congress to achieve a certain end has answered the hopes and expectations of Congress. It has been a wise policy. It has worked with remarkable success and we are now asked to abandon that policy in time of war."

Asserting that "exploration must go on or the industry must perish," Gore told the committee that the allowance compensates the wildcatter for dry holes. But, he said, it is not full compensation, for 10,000 dry holes drilled last year cost the industry more than $200,000,000 against which the Treasury estimates the depletion allowance at only $80,000.000.

Of the 400,000 producing wells in the country, 300,000 are stripper or marginal wells, he told the committee. Presenting figures on wells in the Pennsylvania-grade district —Kentucky, New York, Ohio, Pennsylvania and West Virginia— he pointed out that the average production is six tenths of a barrel per day; the wells, individually, are of little importance, he said, but in the aggregate they produce 159,000 barrels daily of high lubricating-content oil.

Gore estimated that the government now is spending $123,000,000 a day on the war, and that elimination of the depletion allowance, saving $80,000,000 a year, would finance the war for 16 hours 13 minutes.

He opposed suggestions that a bonus be paid marginal producers, asserting that too much power would be vested in government officials to grant or deny a bonus if they "didn't like the color of a man's hair."

"You feel that the industry now is giving something for what it receives," Congressman Frank Crowther of New York commented. "You don't favor the oil industry coming to the government with a tin cup in its hand?"

"That's right," Gore replied.

The depletion allowance was adopted so that "this Nation would not be found with a shortage of those vital resources because of the absence of any incentive to continue the highly speculative and hazardous search for new sources of supply," it was explained by B. A. Hardey, Shreveport producer who is chairman of the Louisiana State Minerals Board and a member of the OPC production advisory committee of District 3.

Congress Firm in Past

This policy has frequently been challenged in the past, he said, but through the years, "despite the heavy pressures brought to bear, Congress stood firm, realizing the need which might arise, and the confusion which would result, from an abandonment of its long-range policy."

Today, he said, we are engaged in a war requiring many times as much oil as did World War I, which led to adoption of the depletion allowance, yet despite the proof of the effectiveness of the policy, the Treasury again is seeking to eliminate the provision to gain a comparatively small added revenue and eliminate "special privilege."

Requirements Enormous

"Our petroleum reserve appears large in terms of barrels, but the requirements of this Nation and its allies are enormous," he warned the committee. "The supply is not inexhaustible. Every barrel of this country's present production from stripper and marginal wells should be kept available. Such wells must not be shut down because of burdens which make it impossible to operate them. Even this is not enough. We must prepare for a long war. If we are to meet the demands of a long war, to say nothing of the post-war period, it is imperative that we extend every possible effort, not only to conserve the production we now have but to explore for new reserves.

"Obviously, unless there is enough incentive, in the way of a possible margin above taxes in the event of success, the risk money required for exploration and development will seek a safer place to work. If any change were to be made, it would be wiser to provide an increased incentive for exploration and wildcatting work in order to provide and maintain adequate reserves."

Hardey analyzed the Treasury recommendations to expose the difficulties which would be encountered in administering a new method of handling depletion, holding it was doubtful whether the additional revenue obtained would compensate for the administrative difficulties.

"The petroleum industry submits that the present provisions for percentage depletion and the right to deduct intangible drilling and development costs are not

'special privileges,' but in fact represent the means through which Congress has for nearly 25 years expressed its broad national policy of encouraging the development and maintenance of adequate reserves of natural resources," he said.

This policy, he continued, has provided the producer with a real incentive to search for new reserves; supplied the producer with funds which could be risked in search; kept thousands of stripper and marginal wells in production without the necessity of a price differential for their oil, and contributed materially to the building up of the more than 19,000,000,000-barrel reserve.

Reason for Continuance

"The urgent need for a continuation of the Congressional policy," he said, "is disclosed by the following:

"1. The enormous demand for petroleum and its products made upon this country by the present conflict require both the conservation of our existing reserves and an accelerated discovery of new reserves.

"2. The continuance of stripper and marginal well production is necessary both from the standpoint of existing reserves and from the standpoint of their strategic value.

"3. The present trend of discoveries is downward, since it now takes an increasing number of wells to discover a new field and the fields discovered have, on the average, less oil in reserve.

"4. The present trend of discoveries, coupled with the increased cost of exploration, requires increasing amounts of money each year to risk in such ventures.

"5. The need for new reserves with which to carry on the war, when coupled with the fact that reserves are becoming increasingly more difficult and expensive to find, requires continuation of the present policy and points to an increase rather than a decrease in the incentives to search for new reserves."

Challenging the Treasury's claim that the allowance is a special privilege, Harold B. Fell, Ardmore, Oklahoma, vice chairman of the production committee for District 2, asserted that both it and the authorized treatment of intangible development costs are merely recognition of the unusual conditions which exist in the producing branch of the industry.

"For 25 years the Treasury's regulations have recognized the oil industry's right to expense intangible drilling and development costs, and both Congress and the courts have repeatedly found that the oil producer is entitled to an allowance for depletion," he told the committee. "For 16 years, after numerous surveys of this question, Congress has retained the percentage method of calculating this deduction and has adhered to the present rate of percentage."

Fell emphasized the expense and risk incident to production, the necessity for continuous drilling to keep the supply of oil constant, and the obligations upon the operator to protect the interests of the landowner by reasonable development of leases, the need for offset wells and the constant drive to achieve conservation.

"The oil industry has repeatedly emphasized the extreme hazards which are incurred in the search for oil and gas production," he explained. "The percentage of failure is so great that it, of itself, differentiates the oil industry from other lines of business. The point to be emphasized is that the risked money which is necessarily lost in fruitless search for production bears a definite relationship to the proceeds derived from the fruitful ventures.

"A large percentage of the wells that produce oil never repay the money spent for drilling. Figures show that approximately 84 percent of the wildcat wells drilled in 1941 were dry. The only way in which the operator can offset these losses is by obtaining sufficient income from the successful ventures to cover the cost of all his ventures, both successful and unsuccessful.

"All of these peculiar circumstances prove that the oil-producing business is extremely hazardous and that increasing amounts of money must be plowed back into every venture. We who have spent our working lives in this business have understood that the deductions under discussion were authorized, not only in order to provide the incentive necessary to compensate in part for these hazards and inherent burdens, but also to give the venturer some insurance against being taxed, on the long run, or more than is truly net income."

East Coast Dark

A dark picture of the East Coast situation was painted for the committee by Robert E. Allen, deputy petroleum coordinator, appearing at the request of Representative Wesley E. Disney of Oklahoma.

"The OPC is almost desperately engaged in doing everything possible to maintain a supply of fuel oil to the eastern states," Allen declared in beginning his testimony.

"In spite of the loss of the Dutch Indies which we will largely have to replace from our own resources and despite the possible cessation of operations in northern South America which we may also have to supply from resources of our own, there is no particular cause for apprehension during the next year or so that the petroleum industry of the United States will not do its bit toward the winning of the war. That is the result of 83 years of constant development and progress of the industry."

But, he added, despite the favorable national picture, the future is uncertain.

The 19,000,000,000-barrel reserve, he told the committee, "seems a lot of oil, but in terms of our consumption and our obligations to our allies it is none too much. I would much prefer to see that known reserve in the neighborhood of 25 to 30 billion barrels so we would have a proper factor of safety for winning the war and carrying on through the difficult reconstruction stage which is sure to follow."

That we do not have that 25,000,000,000-barrel reserve, he continued, is due to the fact that for the past three years the industry has been drawing more oil from the ground than it has been discovering because, despite the expenditure of hundreds of millions of dollars, each year fewer and fewer new pools are discovered and those that are found run smaller and smaller. At the present time, he said, we are drawing about three times as much oil as is being discovered, and there is no prospect that the situation will improve this year.

"It may be that optimism regarding the oil ressources of the country has been a little high," Allen commented, adding that, on the other hand, it may be that new methods of discovery may be needed.

OPC, he said, is concerned about the maintenance of suplies—"a difficult job which is becoming increasingly tough"—and, he added, "we are looking ahead, however, and we view with some considerable concern—not with alarm—the fact that our oil reserves are melting down at a rate considerably faster than we are able to replenish them."

Among the factors which have

[Continued on page 58]

Here Is "The Plan" for CIO Protection

ON THE left hand column of this page and succeeding pages will be found the complete, verbatim Plan which the CIO is offering oil companies with whom the CIO is the bargaining agency. On the right hand columns will appear comments on The Plan.

Briefly, The Plan proposes an armed, drilled, military type of organization in each company for which the CIO is the "bargaining agency." It is a counterpart of The Plan now operating on the West Coast with Harry Bridges as a "commander."

The Plan appears innocent enough in spots, while in other spots it has weaknesses which, were it not for the fact that it has been offered in deadly earnest, would rate it along with the first month effort of a group of college freshmen, with due apologies to the freshmen.

"The Plan"

Foreword

THE (———— ————) Corps is being sponsored and organized by the undersigned and a group of interested individuals representing large employe groups in the steel and petroleum industries in the (————) area. The form and structure of the organization has already been tentatively worked out, and the organization's services have already been offered to two major oil companies, the officials of which have expressed interest therein, and are now considering the plans in detail. While the organization's services would be made available to all interested employers, it is felt that if it is taken into and made an official part of the (————) County Civilian Defense set-up, it will, thereby, be made more readily acceptable to defense industry as a whole, and its purpose can, therefore, be more effectively accomplished.

Objectives

The immediate objective of the proposed organization is to combat sabotage and other under-cover activities that interfere or threaten to interfere with the speedy and efficient carrying out of the military program of the United States government. The activity of the organization will be primarily confined to refineries, factories or other establishments in which the members are employed, but surveillance will be extended to activities outside of the plant, if directly related to plant conditions.

Members of the organization will function primarily as watchers or observers, reporting suspected conditions or activities to the proper officers

Comments on "The Plan"

ONE of the things which make us wonder about The Plan is the personnel who signed it and proffered it. The Plan is CIO conceived and nurtured. There is no law against Communism in the United States, it is true. The fact that a federal indictment has been brought against the secretary of the Communist party in Texas does not mean that it is illegal to be a Communist—(this secretary being charged with draft evasion, not Communism) but the CIO in our opinion, is the front for the Communist party in the United States, and this does not help The Plan in the minds of those who would have nothing to do with Communism, be it of the Over-Seas or the Domestic type.

Companies Do Not Favor Plan

The foreword opposite would have you infer that the companies to whom The Plan has been offered are looking with favor on it, while actually the opposite is the truth.

The Plan has not, as yet, been offered to the Civilian Defense organization in the area referred to, and if it is offered and is accepted as a part of such Civilian Defense, then the Civilian Defense in the specified area will be acting contrary to the position it has taken when other organizations have offered their services intact as organizations. Said the head of Civilian Defense in the area referred to: "The job of Civilian Defense is a job for all Americans, not for organizations as such. There should be no club, fraternity or other unity involved. We are all Americans with a job to do, and Civilian Defense should no more be divided up into cliques or inner-organizations than the army or navy should be."

Let's Look at the Objectives

The Plan says that the *immediate* objective is to combat sabotage. *What is the ultimate objective? No reference is made to the ultimate objectives although other objectives than the combating of sabotage are inferred in the first line of the paragraph setting out, not one objective, but objectives.*

Note that not only does The Plan call for activity in the plants affected, but "surveillance" would be extended to activities outside the plant, if directly connected with plant activities.

The Plan indicates that the organization will function primarily as "watchers" or "observers"

clothed with power to deal effectively with the situation (FBI, Sheriff or Police Departments, or military authorities). However, if taken into the official Civilian Defense set-up, members of the organization should be trained, equipped and empowered to deal immediately on the ground with any situation involving an immediate threat to life or property.

Scope of Program and Form of Organization

Although having no military functions at the present time, the organization is being formed along military lines. The undersigned is acting as director, and if the organization is taken into the County Defense set-up, offers to serve as County commander, directly responsible to the County Civilian Defense authorities. Each industry will constitute a separate division with a qualified person selected from such industry to head such division, such person to be appointed by the County Commander, with the approval of all interested parties. The major defense industries in this area at the present time are petroleum and steel, and attention should first be given to these industries. Taking the petroleum industry as illustrative, it would consist of the petroleum Division, and such Division would, in turn, be divided into units consisting of refineries, producing areas, pumping stations, and other industrial units. Each such unit would have a Company commander appointed by the County commander, with the approval of management, or its representative. Such Company commander would have to be an employe of the Company in question. Each refinery, producing area or other unit would be further subdivided into departmental units following the lines of division already set up in the industry itself, with a department or platoon commander, appointed by the Company commander, with the approval of management, in charge of each such departmental unit.

If the organization is to be truly effective, its patriotic purpose must be unreservedly recognized and there must be complete confidence on the part of both management and employes. Having this in mind, both officers and men must be carefully selected from the standpoint of ability, fitness and loyalty, and no other consideration should enter into the matter.

Applicants for Membership

All applicants for membership must have such qualifications as will enable them to pass such examination or test as may be prescribed by the local FBI, or other suitable authority for this group. Members of the organization will be selected from

which leads us to the observation that one need not be a member of a trained CIO squad to watch for subversive activities.

According to The Plan the members of a squad, if it is taken into Civilian Defense, would be empowered to deal immediately with any situation involving threat to life or property, but it seems a bit strange that no provision is made in the plan for any consultation with the owners of the property involved. This ties rather closely into what some CIO organizers have been telling prospective members as to what the ultimate objectives of the CIO actually are. Without going into detail at this time, these plans ultimately provide for such by-passing of the rights of ownership and management as to represent Communism itself.

What Is the Scope?

In the first paragraph under "Scope of Program and Form of Organization" note that it says "Although having no military functions *at the present time.*" Would such an organization *ever* have military functions unless our entire system of government and defense were revolutionized? Can you visualize such units being called into military service and retaining their identity? Only in the Spanish war where the Communists and Syndicalists and Anarchists in the beginning served as local units, has such an organization existed.

Note that the "undersigned" graciously offers his services as County Commander. Why? He is not an employe of any plant to be protected. Note also that he has the nerve to suggest that *he* appoint the division commanders. And note, too, the military type of organization suggested.

The thought will come to some unsympathetic citizens that if there is this much military talent available, it might well be offered to the United States for use in the army.

"If the organization is to be truly effective, its patriotic purpose must be unreservedly recognized and there must be complete confidence on the part of both management and employes," says The Plan. Has the CIO by its past actions, inspired confidence?

Two weeks ago we quoted from a speech of a CIO official who said that not even a grave national emergency would be allowed to interfere with the organization of the unorganized. The man who said this was Philip Murray, head of the CIO, and he said it at the national convention of the CIO in Detroit and was quoted to this effect in the official proceedings of the convention.

And it was Irwin Elber, California CIO oil drive director, who said, "We will not permit Japan to stop our oil organizing drive." He is so quoted in the CIO News, the national publication of the CIO.

This plan, remember, is a CIO plan and it asks for *confidence!*

Can management be expected to have confidence in a plan which stacks the cards on the selection of those who shall be the members of these proposed trained bands?

No FBI Blessing

The paragraph starting "All applicants for membership" implies that such an organization as is proposed might have the blessing of the FBI. It does

the applicants passing such test, with the right on the part of the membership committee to reject any applicant for any reason which to the committee may seem sufficient. The membership committee will consist of the County commander, the Company commander and a designated representative of management.

Unless the organization is taken into the official Civilian Defense set-up, it will doubtless remain unarmed, but in order for it to attain its maximum efficiency, its members should be trained in the care and use of side arms, particularly the pistol, and should also be suitably equipped and given such authority as will be necessary for them to function effectively on all occasions.

Military Training Proposed

Members of the organization should be given basic military training and drill in order to achieve the wholesome disciplinary effect of such training and in order to enhance morale and instill a spirit of cohesion, loyalty and solidarity.

In addition to a course of instruction designed to acquaint them with prevailing methods in use by saboteurs and other subversive elements, members should also be given training in first aid, fire fighting and general safety methods.

The members of this organization, consisting of a comparatively small group of hand-picked men, will constitute the refinery's first line of defense. While their routine work would be primarily observation, in times of emergency or crisis they will be ready and able to take immediate control before even the arrival of a regular plant guard or military forces.

Under the proposed plan of organization, there will be at least one member of the organization on every shift, so that every subdivision and department of the industry will have trained and intelligent surveillance twenty-four hours per day.

From a military standpoint, the structure of the organization will be approximately as follows:

The platoon, consisting of three squads, more or less, would guard the department.

The company, made up of the various platoons, would guard the plant as a whole. Large industrial organizations might find it feasible to have several companies, thus forming a battalion.

The division would consist of all of the units in a given industry.

This type of organization will be well suited to cooperate and even merge with, during times of emergency, similar organizations in adjoining counties. It is even possible to see the program expanded to such a point that it would encompass the entire (————) Defense Area, and eventually the industrial regions of the entire country, all operating under one central control.

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NOT have the blessing of the FBI nor will it have unless political pressure from the top forces the FBI to grant it.

Note that the County Commander (self appointed) and the Company Commander (appointed by the non-employe County Commander) have two votes on the selection of the personnel while "a designated representative of management" has but one! And is the omission of reference to ownership intentional—or does the CIO believe in ownership?

As to arming these "trained bands," which, we hope, would contain none of the CIO members or officers who in the past have closed down plants engaged in defense work, they "doubtless" would be armed only with pistols to start with, provided of course, they have an official status as a part of Civilian Defense. The use of the word "doubtless" in the text causes us to wonder if an attempt would be made to arm them anyway.

Is This Training Necessary?

Again, The Plan refers to military training. If these members, including the proposed County Commander, can make the grade as Home Defense Guards, a state-created organization in the area where this plan is offered, why don't they join? Why keep the authority and leadership in the hands of a County Commander when the self-offered County Commander in this particular area is looked upon by many men of his own profession as the "mouthpiece" of radicals?

It is desirable that all citizens be warned of the methods of saboteurs, and not that a chosen few—a few chosen by a man who has no interest in the physical properties to be protected—be made acquainted with such methods.

Note that such military training as proposed is for the purpose of enhancing morale, and to instill a spirit of cohesion, loyalty and solidarity. Cohesion, loyalty and solidarity to *what?* Does it take a disciplined, military organization, officered by CIO officials, to make a CIO member loyal to his country? And what is meant by "solidarity"? "Solidarity" of or to what?

Note that the men are to be hand-picked—yes, hand-picked by CIO officials, the men themselves not even having a choice in their top commanders, and the company for whom they are working having, from a practical standpoint, no voice in their selection, as band members, because two votes of the CIO representatives to one can nullify the one vote of management.

And finally note the ambitious scope of The Plan which eventually would call for a veritable Napoleon of CIO Military power. Is that necessary? Is it even for one second desirable?

The Plan as offered was signed by several men. We shall not give their names at this time. They are all connected in an official way with the CIO. Some of them have other connections.

Let us say, for the sake of argument, that here is a plan which is patriotic in the extreme. Let us say that it is unfair to suggest that it might be part of a general program to be operative after the war. Let us say that not a single man involved in it would for one second suggest a change from our demo-

cratic government. Let us say that if some misguided CIO-Communist tried to use the organization for other than the ***immediate*** objectives named, the County Commander and other commanders would put their foot down on it at once. EVEN THEN, the plan is rejected on the grounds of common sense, on the grounds that it puts the defense program into a program of cliques, that it gives ownership little or no voice in its own protection, for instead of government supervision, protection of properties would, if the plan fruited to the full bloom of its proponents, be put in the hands of a bargaining agency instead of government.

And so far as we are concerned, the fact that such a man as Harry Bridges was chosen to head such an organization in California is enough to condemn it on general principles.

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Design of Oil-Field Tank Batteries for Conservation

By ROSS M. STUNTZ, JR.,*
Gulf Oil Corporation, Gypsy Division, Tulsa, Oklahoma

AT THE present time, when the entire world is at war, and when battles are being won by planes and tanks which consume vast quantities of petroleum products, it behooves each and every one in the industry to conserve this most important natural resource. Prevention of the evaporation losses from crude oil is conservation in the truest sense. Once the higher gravity components of crude oil escape to the atmosphere in vapor form, they are forever lost.

A majority of these losses can be economically eliminated by a redesign of the tank battery as a whole from a conservation viewpoint. It is even quite possible economically to overhaul old tanks and tank equipment in order to conserve the lighter fractions. However, proper design of the material features of a battery is not sufficient; it is equally important that the men charged with the care and operation of tank batteries regard them as the specialized equipment that they are. A tank battery is more than just so many cans containing oil, or a place to store oil until it is sold. The tanks in modern batteries could be classified as low-pressure, semi-portable or fully portable graduated vessels for the safe and economic storage and handling of crude oils. Their mechanical features, such as valves, especially, deserve cleanliness, care, and protection. Their surfaces, inside and outside, should be kept clean and protected from corrosion and deterioration. Lacking this attitude, devices designed to promote conservation cannot be expected to function satisfactorily.

Average Evaporation Losses

Some 20 years ago, J. H. Wiggins, in a United States Bureau of Mines paper, estimated that the average evaporation losses from well to refinery were in excess of six percent. Numerous improvements in tankage and transportation, a realization that certain production methods are detrimental to gravity, and payment of a premium for higher-gravity crude oils have reduced evaporation losses to approximately two percent. Although losses of two percent seem small, if they are measured in dollars, the total value of the evaporation losses is enormous. Two percent of the present daily United States production, about 4,000,000 barrels, amounts to 80,000 barrels per day, or 30,000,000 barrels per year.

Obviously, if a portion of the lighter constituents in a mixture of hydrocarbons, such as crude oil, is evaporated, the remaining oil will have a greater weight per unit volume than the original crude, that is, the specific gravity will have been increased and the API gravity will have been decreased. By experiment, it has been found that there is a relationship between the percentage of crude-oil volume evaporated and the reduction in API gravity. The relationship is this: The evaporation of 2.6 percent of the volume of a crude oil having an API gravity of from 30 to 42 degrees will result in a reduction in API gravity of 1 degree for that oil. The relationship as stated is an average figure for this range of API gravity. The existence of this relationship justifies the use of the phrase, "conservation of gravity," to denote the prevention of evaporation losses from crude oil. As the portion which most readily evaporates is the more valuable part of the crude, purchasers in many areas pay a premium for higher-gravity crude oils, i.e., those in which the lighter fractions have been retained.

Therefore, in addition to the value of the evaporated production, that which remains has a lowered gravity and commonly sells at a loss of 2 cents per barrel for the reduction of each degree of API gravity. Assuming that the API gravity for one half of the total production has been reduced to the next gravity bracket, the loss sustained through price differential is $\$0.02 \times (4{,}000{,}000 - 80{,}000)/2 \times 365 = \$14{,}300{,}000$. At an average price of $1 per barrel, the volumetric loss is $30,000,000 per year. The total loss is, then, $44,300,000 per year.

Undoubtedly, some of the losses included in this immense figure can be designated as unavoidable. They

* Contributed by the Petroleum Division for presentation at the Spring Meeting, Houston, Texas, March 23-25, 1942, of The American Society of Mechanical Engineers.

occur in areas of flush production before gasoline plants can be installed, and in some older and smaller pools in which condensation and recovery of rich vapors in plants cannot be economically justified. However, there still remains a staggering figure which must be chargeable to waste.

In the normal production of oil, there are four points at which vapors leave the crude. These are: (1) separator, (2) treating plant, (3) field-stock tanks, and (4) pipeline storage.

As previously stated, this paper deals with those losses which occur in field-stock tanks and with the methods by which these losses may be diminished. After experimentation at numerous tank batteries in the Mid-Continent area, it is estimated that the losses incurred in filling and temporarily storing lease production may amount to 1 percent and, in some cases, more.

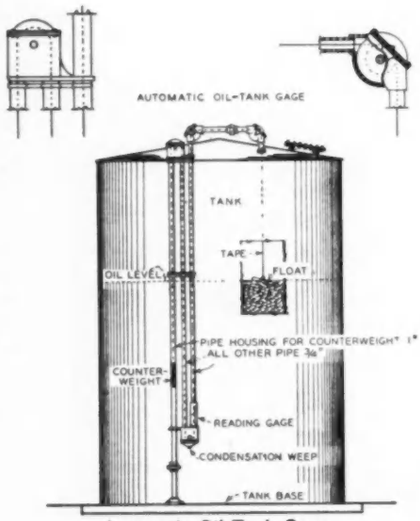
It would be a proper question to ask: Although these losses seem enormous when calculated on a national basis, are they of sufficient magnitude to justify the installation of proper tankage and gravity-control equipment on leases making 50 barrels or less? The answer is, yes!

Experimental Installations

Experimental installations on various leases in Glenn Pool, in Burbank, and at several other locations have revealed that the proper tankage and gravity-control equipment will effect sufficient additional revenue to pay for their cost of installation in a relatively short period of time. There are many tank batteries at which the API gravity of the oil being sold could be raised 1 degree through the use of gravity-control equipment. This becomes important when it is realized that such a change would increase the sales revenue by as much as 4.6 percent. This is based upon the premium of 2 cents per barrel being paid for each additional degree of API gravity, and a 2.6 percent increase in volume of sales. This additional revenue will pay for tightening up the tanks and the installation of gravity-control equipment in 6 months and will even recompense the producer for a complete new tank battery, designed from a conservation viewpoint, in 3 years or less. Therefore, by accepting these statements which are matters of record and not mere conjecture, it can be stated that:

1. Existing evaporation losses from lease tank batteries can be drastically reduced.

2. It is economical to do so.



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Controlling Vaporization

Vaporization of a given crude oil depends upon the following factors:

1. *Pressure.* Vaporization is inversely dependent upon the pressure maintained in the tanks, that is, the higher the pressure, the less the vaporization.

2. *Surface Exposed for Vaporization.* Other factors being equal, nearly 5 times the vaporization would occur in a tank 22 feet in diameter, as compared to one 10 feet in diameter.

3. *Temperature.* Vaporization of a given crude is directly dependent upon the tank temperature; the higher the temperature, the greater is the molecular activity and the greater the vaporization.

4. *Agitation.* Vaporization is increased by agitation.

Therefore, if these factors can be controlled, then the losses suffered by vaporization can also be controlled. The degree to which these losses are diminished must obviously depend upon the control exercised over the factors governing vaporization.

The first requirement for control of the factors which govern vaporization is proper tankage. Proper tankage denotes tanks which will safely and continuously hold a pressure of at least 16 ounces per square inch, which are painted with a heat-reflecting paint, or have insulated walls, and which are as small in diameter as the required volume will economically permit.

Welded-steel production tanks are particularly well adapted for use in pressure systems. They can readily withstand a pressure of several pounds per square inch or a vacuum of a like amount. This is not to be construed as a condemnation of bolted-steel or wood tanks for conservation purposes. Each type of tank has its particular place and job. Both bolted-steel tanks and wood tanks can be obtained which will hold 1 psi. However, the availability of No. 2 steel, proration restrictions, and inexpensive portability have stimulated the manufacture and use of small welded-steel stock tanks.

To keep the temperature within the tank as low as possible, metal tanks should be painted with a heat-reflecting substance. Heretofore, aluminum paint has been used for this purpose. At present, shortage of aluminum forces the use of white or light-colored paints. The thick staves in wood tanks provide their own insulation; however, insulating material is often placed upon the deck of a wood tank to protect both the tank and its contents.

Because vaporization is dependent upon the available surface, it is important that this be kept at a minimum. Therefore, the diameter of the tank should be as small as is consistent with the required volume. Also, it seems reasonable that, if the battery consists of several small-diameter tanks, and runs are made frequently, the losses will be less than they would have been in one large-diameter stock tank with infrequent runs. Therefore, tankage should be fitted to each particular lease, so that production will not have to remain in lease storage for long periods of time.

It has been common practice in the past to allow oil entering a tank to fall from the deck of the tank to the surface of the liquid in the tank. This created a very undesirable agitation which promoted vaporization. In order to minimize this disturbance within the stock tanks, several methods of conveying the oil to the liquid level have been used. These are as follows:

1. By means of a pipe nipple and an elbow immediately below the oil-inlet opening, the stream of oil is deflected against the shell and permitted to slide down the shell in a wide thin stream. In this way, excess or free gas is allowed to escape and the stream quietly enters the body of the liquid in the tank.

2. By means of a sloping trough the oil is conveyed to the bottom of the tank without agitation.

3. The oil-inlet connection can be placed near the bottom of the tank. This method of entry forces all free

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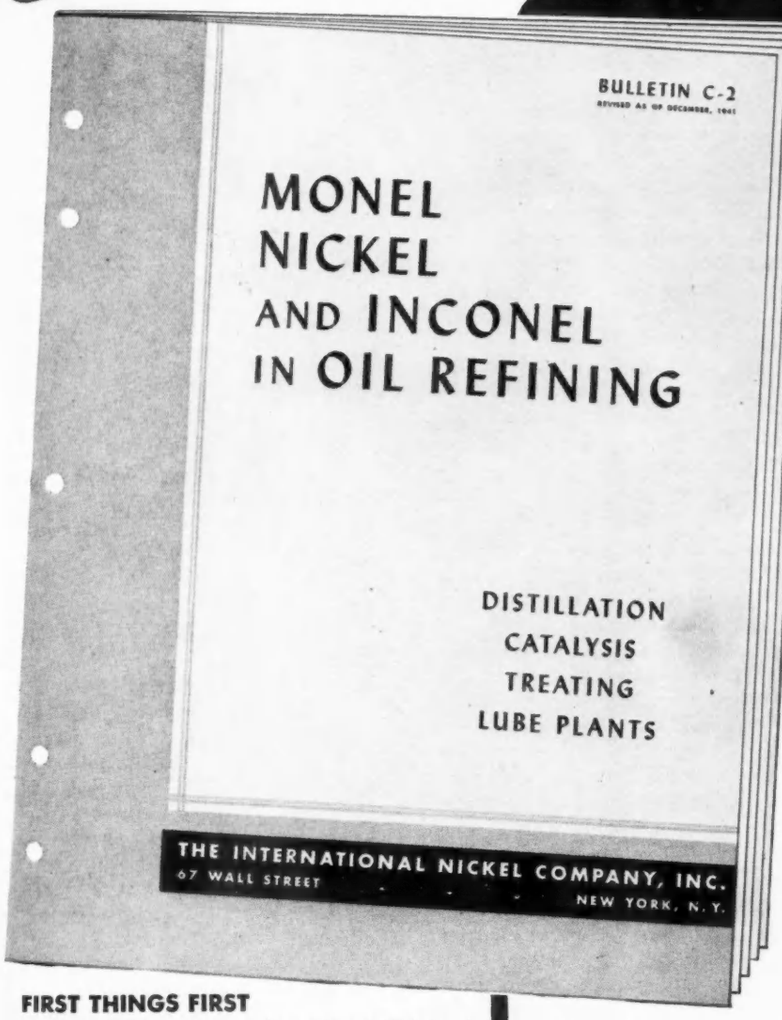

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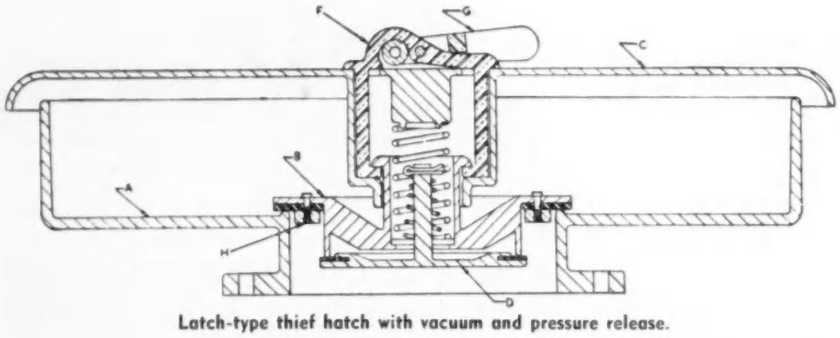


Latch-type thief hatch with vacuum and pressure release.

gas to bubble up through liquid already in the tank, also causing a considerable amount of agitation.

4. A fourth method consists of a sloping pipe which conveys the oil from the deck to a point about 12 inches from the bottom of the tank. A standard tee is used on the lower end of the pipe to prevent a continued jetting action of the bottom sediment and water in the bottom of the tank. Two 1-inch holes are cut in the pipe immediately below the tank deck. These holes permit gas to leave at this point rather than travel to the bottom of the tank and agitate the oil as it rises.

The prevention of agitation in stock tanks is undoubtedly a good idea in principle, and there are producers who claim that these devices have effected very noticeable increases in gravity. Downpipes, troughs, or entry of oil at the bottom of the tanks necessitate the use of sampling cocks on the oil-fill line, in order that the operator may determine the bottom-sediment and water content of the oil going to stock.

In maintaining a pressure of 14 to 16 ounces in 12-foot-diameter welded tanks, constructed of 3/16-inch steel plate, it has been found that, when the tank contains only a small amount of oil, the bottom will bulge, raising the shell of the tank a considerable amount, pulling pipe-line connections out of the ground, and doing other damage. In order to prevent distortion of the tank bottom and movement of all lines connected to the tank, a tank tiedown has been devised. Each tiedown consists of two pieces of angle iron, 3 x 3 x 3/8 x 10 inches, which are welded vertically to the shell of the tank just above the bottom. The remainder of the tiedown consists of a 1-inch J-bolt which hooks about a piece of 2-inch pipe, 3 feet long, embedded in the concrete foundation. There are 4 tiedowns on each 12-foot-diameter tank, situated 45 degrees from the quarter points. It is possible that these tiedowns would not be required on the smaller-diameter tanks when holding 16-ounce pressure or less in the tank.

Closed Pressure Systems

Obviously, each time a tank in a pressure system is opened, a considerable quantity of valuable vapors is lost. The goal, therefore, of those who advocate conservation of gravity at tank batteries, is a completely closed system in which the tanks are never opened except for cleaning. This goal has been achieved in only a relatively few isolated and experimental instances. At present, this goal, modified by past practices and present equipment, consists of not opening the tanks more than is absolutely necessary and thus prevening losses by vaporization.

The devices which are being used experimentally to maintain completely closed pressure systems are interesting, because they constitute definite steps toward conservation. None of them has received a general acceptance from the oil industry; however, some have met with local favor. They merit a brief description of their operation because, undoubtedly, some of them will be common tank equipment in future years.

1. One possible solution to the problems involved in maintaining an entirely closed system is the use of pressure-gauging and thiefing locks which have been manufactured by one of the prominent tank companies. When using these devices, it is possible to gauge or "thief" a tank in the usual manner without the loss of any of the vapors in the tank. The thief lock attaches to the tank at the common 8-inch round thief-hatch opening and consists of a long thief-hatch bowl and valve on top of a lock chamber. There is a large flapper valve at the bottom of the lock which is manually operated by a crank. A smaller and less expensive lock may be used for gauging only. The tape to be used in these operations is contained in a case which makes a vapor-tight fit on top of the pressure locks. The case contains a wiper which cleans the tape each time it is reeled in.

2. There are several devices now being manufactured which may be used to indicate the height of oil in the tank without having to employ a gauge pole or open the tanks. Most of these devices involve the use of a float in the tank attached to a balance weight outside the tank by a metal tape. The balance weight and the tape are placed in a pipe which is closed to the atmosphere but open to the tank pressure. The piping contains a short nipple of a transparent material through which the oil level may be read from the tape. The principal use of this gauging device at the present time is in large storage tanks.

3. Sampling may be done under pressure by sample cocks. The usual practice among oil purchasers is to secure a composite sample of the oil in the tank by mixing a portion of samples taken with an oil thief at three different levels in the tank. This could be accomplished by installing sample cocks at three points on the shell. The pipe on the sampler should extend back into the tank about six inches. This method of sampling has been tried experimentally in the Mid-Continent area and proved to be quite satisfactory. It is reported that this method of sampling is quite common in California. A sampling tube or pipe might also be used to check the bottom-sediment level if one were placed 4 inches below the pipe-line connection.

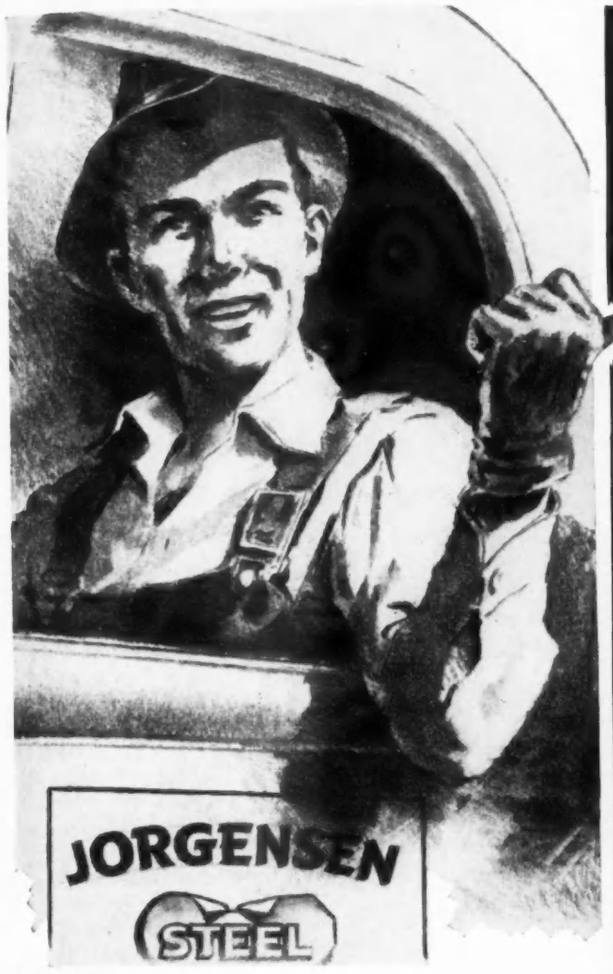
4. It would be entirely possible to gauge some stock tanks by means of gauge glasses. However, it may be that this would not be feasible when handling the very low-gravity crudes. Such glasses would require protection against breakage, for, a carelessly broken one would allow oil to leak out of the tank onto the grade and create a dangerous fire hazard. It would also be necessary to connect the glasses in such a manner that they could be easily cleaned.

In addition to the reduction of evaporation losses, there are two benefits to be derived from completely closed pressure systems:

1. There will be a reduction of the hazards attendant to gauging tanks in sour-gas areas. There will be no opportunity for the fatal, or near fatal, accidents which have been caused by breathing toxic vapors.

2. A completely closed pressure system will do much to prevent corrosion of the inner surfaces of metal tanks. There are many examples to be had in which there is no corrosion to be found in the wells, lead lines, or separators, yet the tankage is severely corroded. The tanks are the first

"SURE, WE'RE BUSY...



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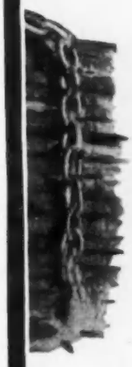

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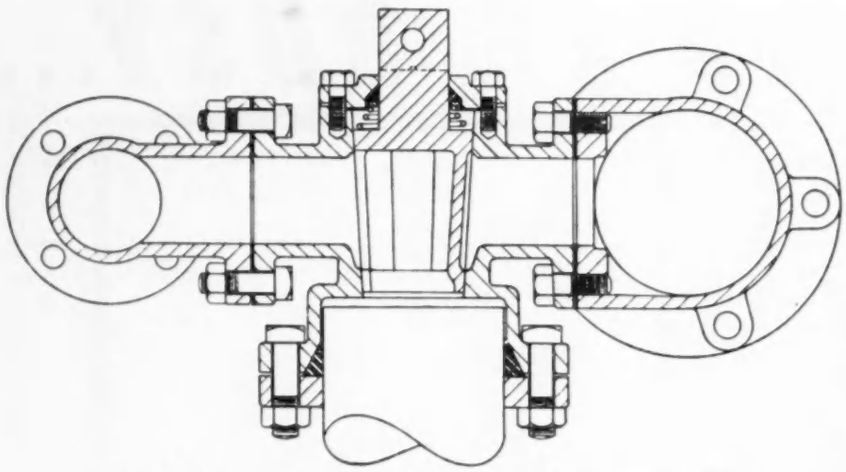


Special three-way plug valve with two-inch and four-inch connections.

place in which the produced fluids are exposed to the atmosphere. If oxygen is excluded from contact with the fluid in the tank, the rate of corrosion should be drastically reduced. Thus, the closed pressure systems will be the means of extending the life of steel production tanks. In this connection, it is especially important that thief hatches be closed while oil is being pumped out of a tank. As the oil is drawn out of the tank, air would be drawn into the tank if the thief hatch has been left in an open position. Such a procedure encourages corrosion and may noticeably reduce the gravity of the sales.

Design of Thief Hatch

One of the most essential pieces of auxiliary tank equipment is a reliable thief hatch; one which has been tested and can be depended upon to open at the stated pressure and vacuum, no more and no less; one that has large pressure- and vacuum-release openings in order to protect the tank from excess pressures; and one whose gaskets are oil-resisitant and can undergo thousands of pressure and vacuum releases without damage. The gaskets and springs should be readily replaceable. An illustration shows a thief hatch which has these desirable qualities. It is a spring-loaded latch-type 8-inch-opening thief hatch, with an 8 x 22-inch bowl. It is now in common use with welded-steel tanks. All nuts and screws are large enough to be durable. The gaskets are readily replaceable and the springs can be removed by merely depressing and turning the pressure disk through 90 degrees. This general type of hatch is also manufactured in a dead-weight variety.

The second piece of equipment necessary to a pressure system is a back-pressure valve for use on the manifolded vent or equalizing line which is connected into the tops of all the tanks. These valves can either be placed in the vent line after the last stock tank, or on the end of the vent line as a stack valve. They are generally weight-loaded, should have a large area through the opening and should be accessible for cleaning from the ground or tank deck. It is believed that valves, thief hatches, and back-pressure valves are more satisfactory when equipped with oil-resistant rubber gaskets. The reason for such a choice is that any string, small amount of dirt, or any minute foreign material will probably cause leakage through a metal-to-metal seat, while a rubber gasket can maintain pressure even though a small amount of foreign material is on the seat.

The third requirement for successful operation of a pressure system for a tank battery is some method of opening one tank without losing the valuable vapors from all of the other tanks. Placing a gate or plug valve in the tank riser to the vent line would be the most obvious means of doing this. Another device which is being successfully marketed consists of the use of a check valve in the tank-vent riser. When the thief hatch is closed, a lever holds this check in an open position and allows the tank to breathe as need be, in conjunction with the other tanks, through the medium of the common vent line. This same method has been incorporated in a thief hatch which has the vent opening and check-valve seat cast as a part of the thief-hatch base.

These methods effectively remove one tank from the vent system and prevent loss of vapors from any but the one tank. However, they lack one important safety feature. They allow gas from the tank to be discharged directly into the operator's face when the thief hatch is opened. This has cost the lives of several men and has caused numerous near-fatal accidents. For this reason, a system has been designed whereby this gas is discharged at some distance from the thief hatch.

The original system which fulfills this requirement consisted of a standard three-way stopcock placed in the tank vent-line riser. The remote-control operating handle was hinged to rest upon the hatch in such a way that this handle must be pushed back in order that the hatch might be opened. Thus, when the thief hatch was closed, the three-way stop cock was open in a through position to the regular vent line on whose outer end was a back-pressure valve. When the handle at the thief hatch was operated, the tank was taken out of the pressure system and, at the same time, the gas was vented through the side opening in the three-way cock. Gas was then carried completely away from the tanks by a blowoff line.

The eventual outcome of this development was a special plug valve manufactured for this express purpose. An accompanying drawing shows this valve in detail. In operation, gas passes through the hollow plug and through one of two side openings either to the blowoff line or to the regular vent line. The tees on either side of the cutoff valve are flanged, and the running openings are equipped with slip-on flanges and rubbers which require no threads. In operation, it is very similar to the three-way stop cock. When the hatch is closed, and the handle is down, the valve is open from the tank into the regular vent line. When the lever is raised, the tank is shut off from the other tanks and opened into the blowoff line. Thus, when the hatch is opened, the gas has already been vented and does not strike the operator in the face.

As it is seldom necessary to open the receiving tank, the complete pressure-control system does not extend to this tank. However, it is connected to the common vent line and has a thief hatch similar to those on the stock tanks.

Other Conservation Devices

In addition to the tank equipment which is necessary to effect a conservation of gravity, there are other devices which may be utilized to reduce to a minimum the number of times a tank must be opened. Two of these are described as follows:

Automatic Fill Valves. Several types of fill valves have been manu-

[*Continued on page 44*]

Large flow lines empty fluid into a settling pit. Well's average output is about 570 barrels of fluid daily, of which only 5 percent is oil.

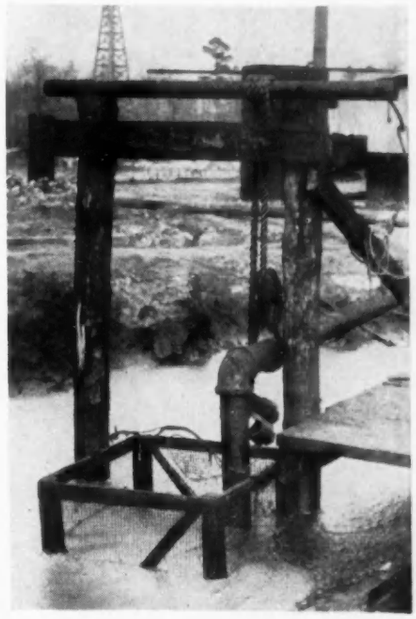
Air Compressor Station Permits

Lifting Economy in Old Field

By GORDON B. NICHOLSON
Staff Writer

EFFICIENT and economical performance in lifting large volumes of fluid from aging wells over a period of years is exemplified in the air-lift station of Arkansas Fuel Oil Company in the Urania-Tullos area of LaSalle and Winn Parishes, Central Louisiana. Installed in 1928 as a steam compressor plant, the station developed, as necessitated by changing field conditions, into a modern system driven by natural gas and capable of jetting large volumes of fluid from wells connected to it, allowing them to be produced long after water content complicated their operation. Costs are cut to a low figure, lifting and workover expenses amounting to a substantially lower sum than those on wells in the field not connected with the air-lift plant, while repair and replacement of equipment is negligible.

The field was discovered in 1925, production coming from the Wilcox at 1550 feet. Spreading over an area of 2500 acres, accumulated production from the field now approaches 26,000,000 barrels, the combined yield from 272 wells. With little gas present in the production, and gravity of the oil 21, flow usually ceased after a short time, and artificial lifting was soon employed on virtually all wells. The first problem to consider in lifting the heavy oil was the handling of large volumes of fluid, as water encroachment was severe and prompt. Water has since reached such proportions as to make economic operation difficult in many wells, necessitating handling of several hundred barrels of fluid daily to continue producing satisfactorily.



Adjustable suction connection picks oil off surface of the settling pit and carries it to storage tanks.

Arkansas Fuel Oil Company soon realized that large fluid movement would be needed if the wells were to be of permanent value, and at an early date made plans to care for this condition. The air-lift plant was constructed, with the prime movers being boilers which furnished power for the steam-driven engines which were used at that

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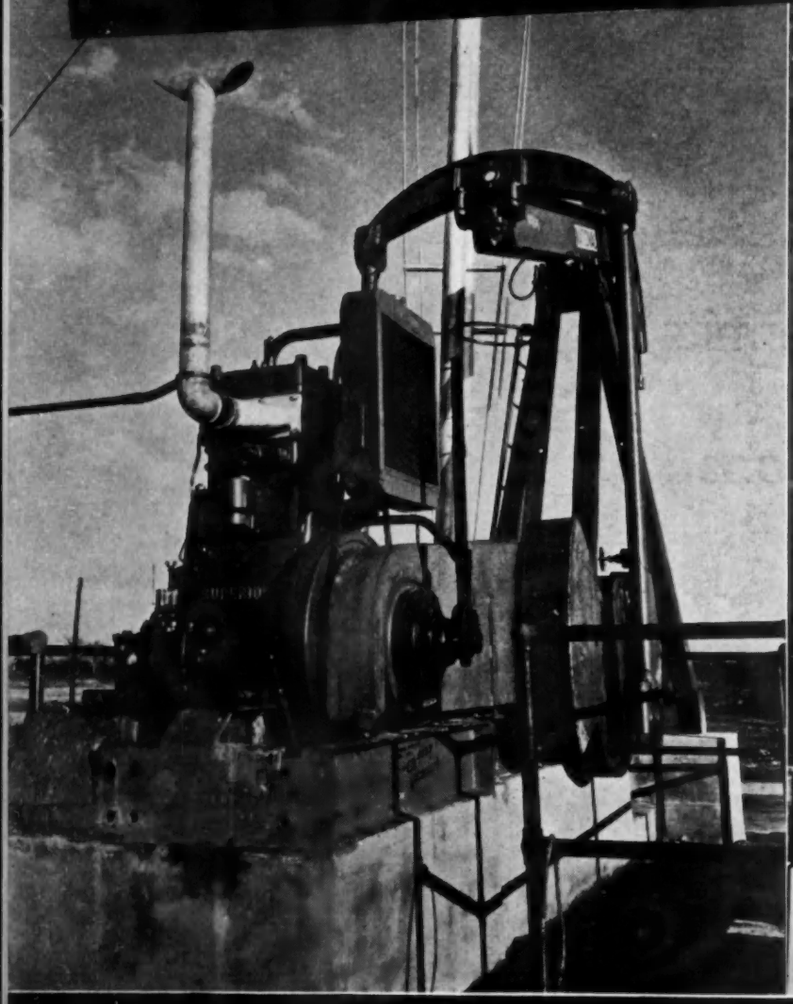
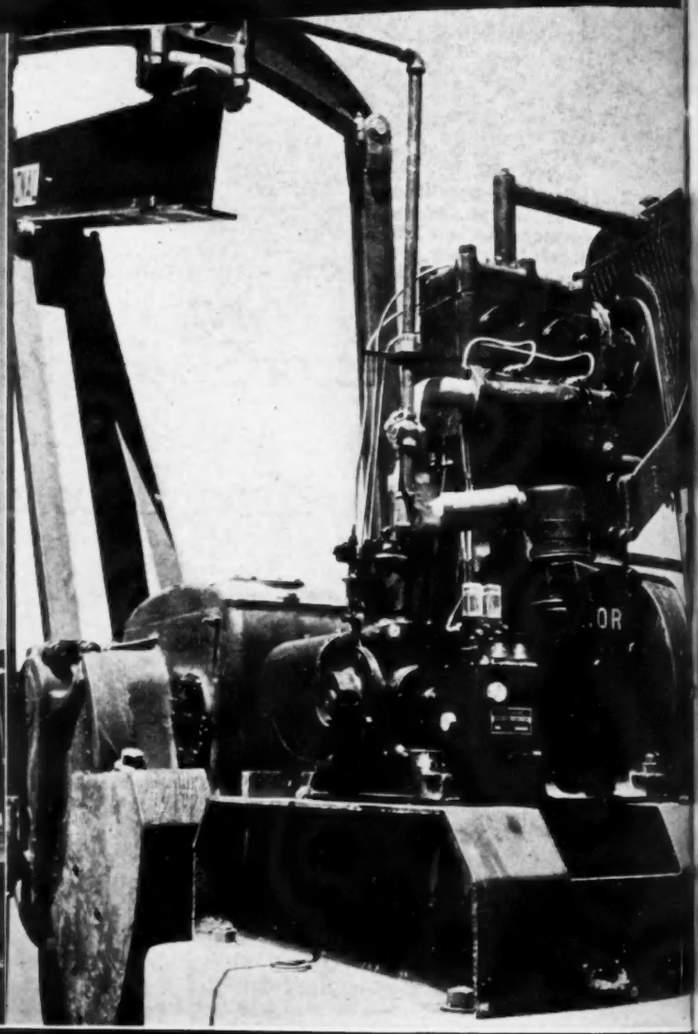


Type EA, Two-cycle Twin, 5" x 6" in the East Cromwell Field, Oklahoma



Superior Type DVA, Twin cylinder, 4" x 5" Gas Engine on a Texas Lease

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THE Types EA and DVA Superior Gas Engines have been developed and perfected over a period of years especially for outdoor service on single well pumpers . . . They are simple, sturdy, dependable units, completely self-contained, and outstanding in their ability to operate continuously in 24-hour service under long periods of time.

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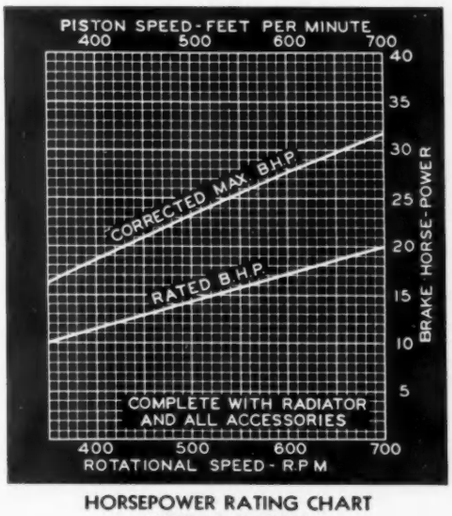
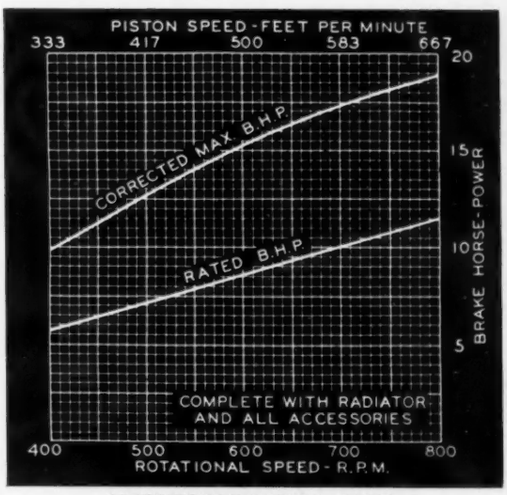


HORSEPOWER RATING CHART
TYPE EA ENGINE



HORSEPOWER RATING CHART
TYPE DVA

Note particularly the conservative H. P. rating of these engines with the surplus power available for sudden overload or emergency.

SUPPLY COMPANY

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Spraying system provides means for cooling the 1200 gallons of water the big engines use every minute. Three wells furnish water for the plant, and also supply the town of Urania with water.

time for compressing air. It was not long, however, before a gradual change to gas engines was affected, the first engines of this type being installed early in 1928. By March, 1929, additional engines were added and the plant reached its present proportions.

Description of Plant

An elongated building made of corrugated iron with concrete flooring houses the machinery. Inside this structure, placed in a single column, are located 8 compressors which serve the air-lift system, although only 6 of these have direct roles in supplying input gas. These are both high- and low-stage compressors, all operating at 180 rpm, the first two each handling 500 cubic feet per minute, and each of the other four having capacities of 750 cubic feet per minute, with the combined output 4000 cubic feet per minute. The larger, 165-horsepower compressors, provide a maximum pressure of 1000 pounds, although normal working pressure applied to the wells varies between 250 and 300 pounds.

At the end of the line of large compressors are 2 smaller ones of 80-horsepower each, and with capacities of 200 cubic feet per minute. These engines supply air for jetting the water supply wells in addition to operating a drive shaft which runs the length of the building and which motivates the electric-generating system. By utilizing other belt attachments from the main drive shaft, these machines also move four centrifugal pumps which serve the spraying system.

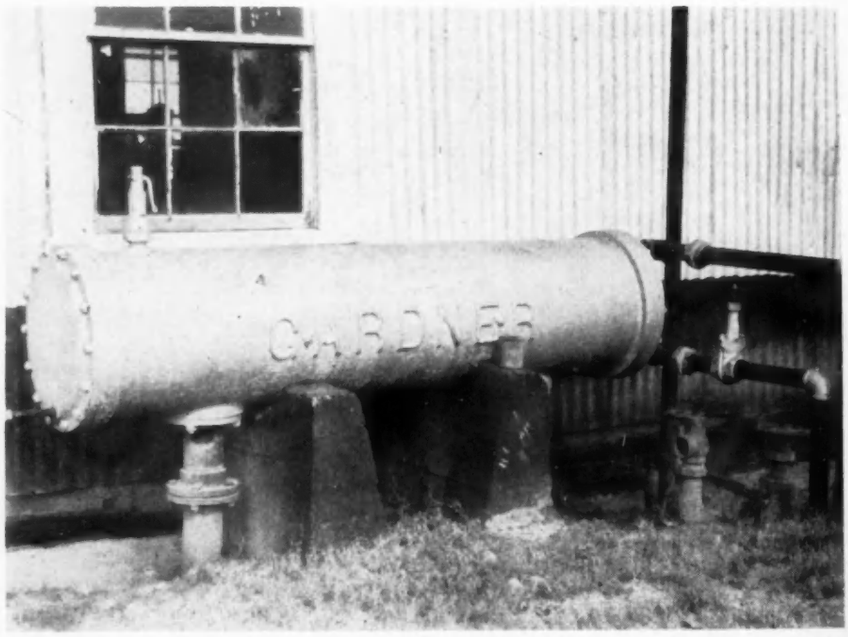
A large cooling pit is provided near the compressor plant, with a net-work of branching water lines carrying water from the compressors to a large number of sprayers made of vertical 2-inch pipes 3 feet tall. Water requirements for circulation of the entire plant amount to 1200 gallons per minute, this quantity being provided by three wells drilled nearby, furnishing water from 350 feet. Water from the wells is lifted by means of air from the plant, and the nearby town of Tullos is also supplied by the system. A reserve supply of water is stored in a 1500-barrel tank located near the plant.

Inside the compressor building is a storage reservoir made of a 15-foot section of large pipe, with ends sealed except for 2-inch outlet and inlet pipes. By means of an auxiliary T-Model automobile engine, a small compressor fills the reservoir with air to a maximum pressure of 250 pounds. The reservoir remains empty under usual conditions when plant is operating, but is used in case of a complete shutdown to provide power to start the larger engines.

Generating Equipment

Connected with the drive shaft deriving power from the compressors is an electric plant which includes two generators, the output of one being 120 volts and 10 kilowatts, the other 220 volts and 18 kilowatts. These generate sufficient power for illumination and for running incidental electrical equipment on the lease and in the small machine shop.

Since the change from steam to the present type compressors, fuel for the system has consisted of natural gas, piped for several years from the Monroe gas field, but now obtained from the nearby Olla



Heated air, following first stage of compression, is run through an intermediate cooler, which reduces temperature by using cold water circulating through its numerous flues.

NORTH LOUISIANA, ARKANSAS

Deep Lisbon Well Blows Out From Unsuspected Gas Zone

By R. MARNE SANFORD

SHREVEPORT, La.—After having set a new depth record for North Louisiana, a deep wildcat exploratory test went further, the past week, and upset predictions by encountering a gas blowout at the 11,880-ft. ... Co. ...

choke under pressures of 500 lb. and 800 lb. on the tubing and casing, respectively. The gas-oil ratio was 450 to 1. Rapid development is expected for the immediate area, and th...

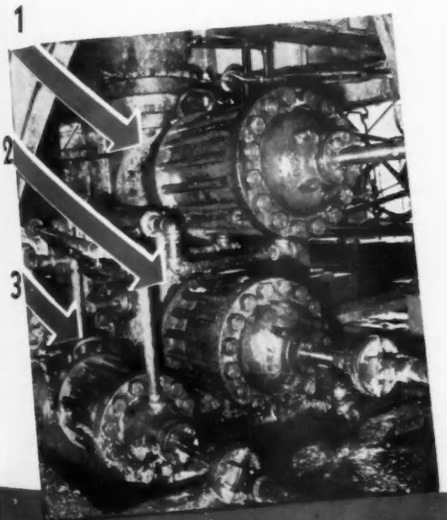
The blowout was quickly controlled by closing the blowout preventer valve. Mud was blown from the hole but the tools and rig were not damaged. At last reports the well was under control, and reported to be only blowing by heads.

Clippings from the January 15, 1942, issue of The Oil and Gas Journal

The operators of this deep wildcat well were prepared for any eventuality. A Cameron 6000 Lb. Test Pressure Operated Drilling Control hook-up was in the cellar to protect their investment in costly drill hole and precious drilling machinery. The control hook-up, similar to the one shown below, consisted of (1) a pressure operated master gate to seal the well bore with pipe out of the hole; (2) a pressure operated blowout preventer to seal swiftly around pipe in the hole; and (3) a pressure operated gate valve to guard against loss of control through the flowline.

Today, only a few wells are drilled below 7000′ in wildcat or proven high pressure areas without the protection of Cameron 6000 Lb. Test Control Units. Since the normal potential bottom hole pressure of any well passes the 3000 lb. mark at 7000′, the operator who drills beyond that depth without 6000 lb. test drilling control units, regardless of mud weight, is inviting trouble.

Operators who are planning exploratory wells are urged to consider the numerous exclusive operating advantages of Cameron Pressure Operated Drilling Control Units and to select those units of *adequate capacity* to withstand the pressures that are likely to be encountered.



A Cameron 6000 Lb. Test Pressure Operated Drilling Control Hook-up similar to the one used on the above well.

These and Numerous Other Mechanical Features Make Cameron Pressure-Operated Drilling Control Units The Choice of Most Operators Everywhere:

1. *Patented Self-Feeding Blowout Preventer Ram Packing Element* — Makes positive shut-off and permits pipe movement under pressure. Gate Valve ram gate is also equipped with Self-Feeding Packing Element.
2. *Fluid Pressure-Operated* — Blowout Preventers and Gate Valves opened and closed by fluid pressure provided by boiler feed pumps or slush pumps. (Manual Control optional.)
3. *Fast Closure*—Keeps mud in hole to assist in controlling well pressure.
4. *Enclosed Fluid Pressure System* — Gas pressure blowing up under derrick floor cannot affect closure of preventers.
5. *High Closing Ratio*—For example, 500 lbs. closing pressure holds 1500 to 2000 lbs. well pressure.
6. *Remote Control* — 4-way valves within easy reach of driller eliminates danger to crew and inspires confidence.
7. *Rams Automatically Center Pipe in Hole* —Extremely heavy wing guides on rams center pipe in hole and cannot be bent or fouled, thus assuring complete closure.

CAMERON IRON WORKS, INC.

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field, where Arkansas Fuel Oil Company has a number of producing wells. Fuel costs for the large twin compressors amounts to about $11 daily per compressor.

Air processed is subjected to two-stage compression. After completing the first stage, it leaves the compressors and is diverted into one of a series of inner, or intermediate, coolers, one serving each compressor, where high temperatures are reduced. The coolers consist of horizontal cylinders approximately 8 feet long and with diameters about 24 inches, inside which are a number of flues arranged similarly to fire tubes in boilers. These heat exchangers are located outside the compressor building, each mounted between two concrete blocks which support it 18 inches above the ground. Exhaust air from the first stage compression is driven into the cylinder at one end through a 4-inch line, while at the other end, a similar line departs to return air to the compressor for additional processing. Temperature reduction is effected by means of cold water circulating through the 2-inch flue pipes, with the heated air passing outside, and in contacting the flues, cooled by the fresh water.

Distribution System

All air, after attaining proper pressure, is carried into a header for distribution. A system of valves on a manifold provide easy manipulation for serving proper wells, with air conveyed to them through 2-inch lines which go to each well.

Separate piping connected with the central reservoir takes air directly to the seven wells in the system. These wells employ two different flow installations, determined largely by their subsurface equipment. All wells were completed originally with 7-inch strings, and several are still using this pipe. However, with presence of large amounts of salt water, corrosion has been severe, and some of the pipe has required reinforcement by installation of 4½-inch liners. In wells which use no liner, the 2-inch air lines from the air storage reservoir connect directly into the casingheads. These wells use tapered strings of tubing, with 4-inch pipe extending several hundred feet below the surface and then swaged to 3-inch which continues to bottom of the production string, at 1100 feet. An especially constructed jet made of ½-inch material is placed in the 3-inch at about 1000 feet, or 100 feet from the bottom of the pipe. A ½-inch tee forms the central structure of the jet, set inside the pipe with three short nipples inserted. Two horizontal nipples extend through walls of the tubing, where they are cut off flush with the outside of the tubing and welded. The third nipple is placed in the tee to stand vertically inside the tubing.

Air injected into the casing from the compressors forces the fluid level below the jet, and enters the tubing through the ½-inch openings, its movement turned upward because of position of the vertical nipple in the tubing. Water is lifted from this level, the velocity at the bottom being considerable in the 3-inch pipe, and reducing as it approaches the surface and enters the 4-inch.

In the several wells where liners are present, large pipe is avoided because of restricted working space inside the pipe, and as a result, straight air lift is used, with air injected directly into 2-inch tubing which extends to about 1100 feet, forcing fluid upward through the casing. In both type wells, surface fittings are swaged at the casingheads for 6-inch connections, and all flow lines are made of 6-inch pipe to handle large volumes of fluid. Production from seven wells amounts to between 3600 and 4000 barrels daily, a present average of about 570 barrels from each well, although in earlier years, considerably more fluid was handled. Of the present production, approximately 5 percent is oil.

Storage Facilities

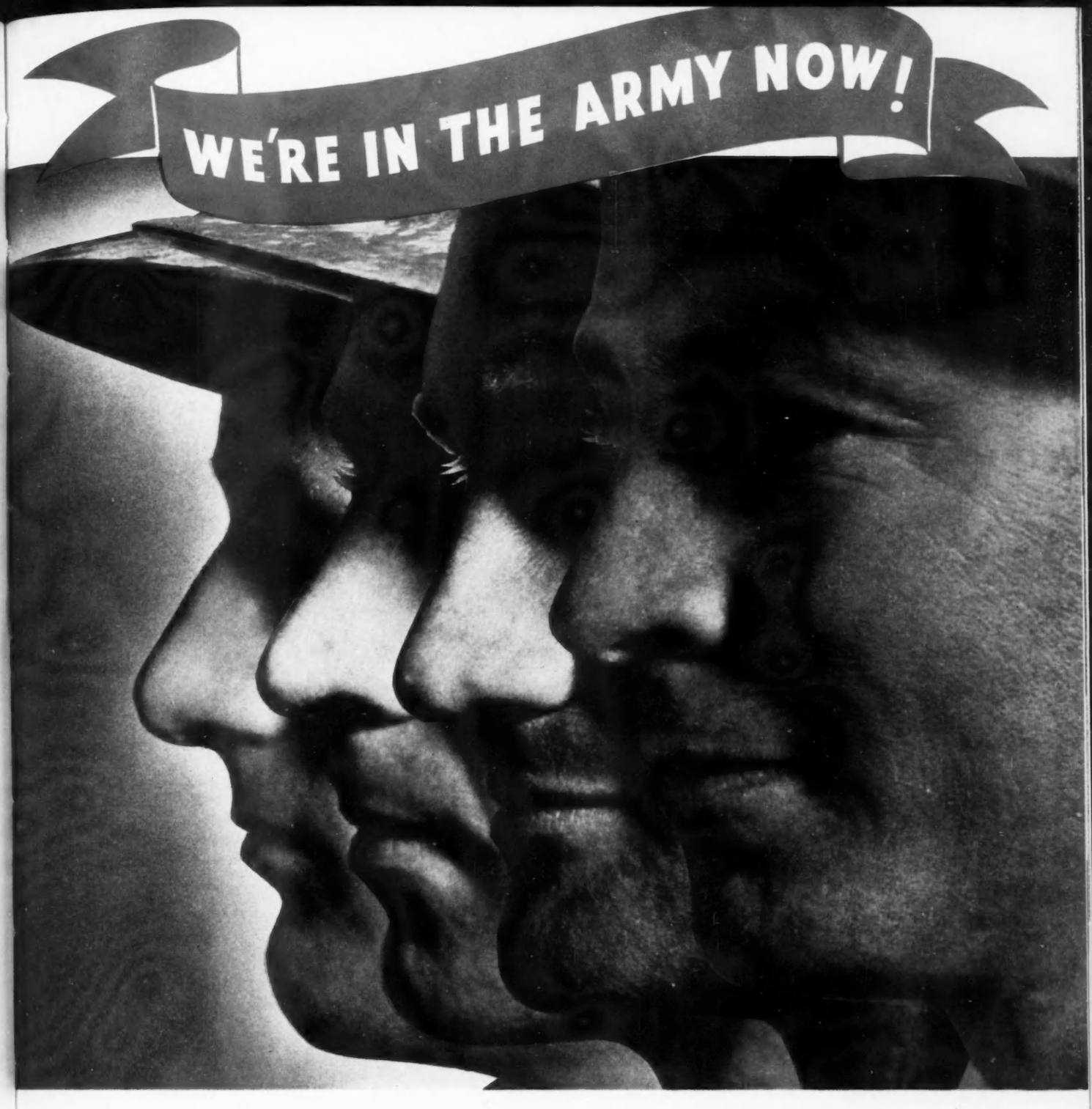
Production is flowed into a central storage reservoir which is dug in the soil with earthen dikes built around the low sides to form walls of uniform height. A lining constructed of wooden planks is erected inside the dikes to retard erosion by the jetting well fluid, each well emptying individually into the pit through the 6-inch lines. Performance of any well may be observed at the pit by examination of its flow line which usually gushes large volumes of fluid. The reservoir is designed to allow water to settle for ultimate removal, and has a number of winding channels which direct flow over a devious route to aid separation. Water is continually drained from bottom of the pits, being removed from underneath the oil by means of pipes projected through the surrounding dike, while the layer of oil, as it accumulates, is picked off the surface through a 3-inch adjustable suction pipe and pumped to storage tanks. Lease storage facilities include four 500-barrel steel tanks located near the central pit.

A boiler which was used as part of the original air lift unit utilizing steam for power, now accomodates treating facilities for the crude. Oil is treated twice weekly at temperatures from 190 to 210° F., with addition of chemicals for reducing emulsions and removing undesirable elements. The boiler treating system handles 100 barrels of fluid hourly.

Performance Record

An examination of the performance of wells operating on air lift unit shows a record of low lifting costs and negligible maintenance expenses, based on conclusions following a 14-year operational period. Despite large quantities of highly corrosive fluid handled, it is recorded that tubing in each well is puiled only twice a year, and then only for inspection purposes to check condition of jets. This efficiency enables the wells to flow at virtually all times, which is important to prevent flooding sands or loading casing with water, followed by a consequent reduction of overall volume of oil produced. Mechanical breakdowns are rare, most of the original equipment still in use, and repairs have been almost non-existent.

Arkansas Fuel Oil Company realizes a large saving in employing the air-lift method of producing wells in this field. Other types lift in this area are not entirely satisfactory due to the volume of fluid which must be handled, and because of quick corrosion caused by salt water. Steady operation of air lift wells prevents accumulation of water which may otherwise injure the oil sands, and simultaneously keeps daily production at a maximum. The operators of the air station, with the average air/fluid ratio now about 1400 to 1, calculate that lifting costs of the wells show a sizeable saving compared with those of other wells in the field. Early abandonment of these wells is indefinitely postponed, while both daily and ultimate production are increased.



We're members of the huge oil industry army that America needs today to supply our fighting men at the front. Lack of oil was one reason the Axis started this war, but plenty of oil will win it for Uncle Sam and his allies.

Day or night we're doing our part in the field. We're hoping the head office won't run the chance of slowing us down by buying anything except the best in pumps and sucker rods. We know good steel is hard to get these days and that skilled machinists are scarce. All of us feel though that if any company should be able to deliver the best it'll be Axelson whose slogan for fifty years has been "There's No Economical Substitute for Quality."

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AXELSON SELLS AND *SERVICES* DEEP WELL PLUNGER PUMPS AND SUCKER RODS

Advanced Geochemical Well-Logging

By DR. JOHN W. MERRITT
Geochemical Service Corporation, Tulsa, Oklahoma

IN THE early days of oil-well drilling, tools and methods were necessarily crude. The first holes were shallow, and measurements of depth were not necessarily accurate, because depth information was not of any scientific interest, but was required by the operator only to tell him how deep new wells in the neighborhood must be drilled to reach the pay.

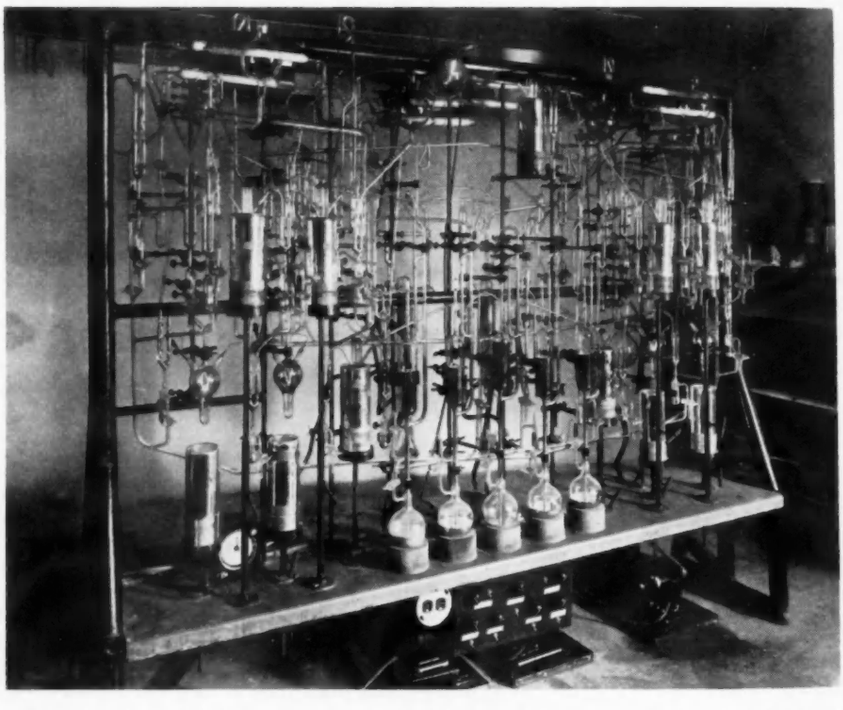
Later, with the discovery of the anticlinal theory of the accumulation of oil and gas and its application to the development of oil and gas pools, operators began to observe that if wells came in too low on structure, they went into water, and if they ran high, they might produce. Soon operators found it possible to determine structure on identifiable strata in the upper portion of the drilling well and thus to foresee the outcome of the test far in advance of completion. These observations and their application led to subsurface mapping of structure by using logs of old dry holes or producing wells or by new formation records obtained in core drilling. As core-hole exploration was carried into deeper and deeper territory, making this type of work increasingly expensive, seismograph and other geophysical means of mapping structure were adopted.

To improve structure mapping, more and more careful sampling of well cuttings and more accurate methods of determination of sample depths were adopted. Thus mineralogical and micropaleontological analyses came into being for purposes of determining stratigraphy. To check these results, in studying both stratigraphy and structure, new methods of well surveying were then devised, carried out by means of electrical devices run into the drill hole. These devices have been developed and improved until the character, depth and thickness of all strata may be determined and the presence, depth and thickness of oil, gas, or water horizons recorded. This method of well surveying has been responsible for finding many pay sands otherwise unsuspected in rotary-drilled test wells, and many an oil field has been found which, without this new exploration tool, would have been lost to the industry.

When oil companies began to employ geologists the anticlinal theory was followed religiously. Before very long, however, disconcerting exceptions began to appear which at first proved thoroughly confusing to the geological profession. Some production was found in synclines. Other producing zones occurred on structure flanks but failed to continue across the top of the anticline. Some sand lenses (shorelines) were found carrying production where no anticline occurred but only normal monoclinal dips prevailed. Again production was found against the basinward side of a fault where the fault acted as the closure. Because of these exceptions to, or variations in, the application of the anticlinal theory, geological and geophysical interpretations became increasingly complex and difficult, and a method of exploration related directly to the actual oil in place became more and more necessary. This need became even more emphatic as new production became increasingly difficult to find, while at the same time the demand for oil increased.

During these years of decreasing geological discoveries and increasing demand for new oil reserves, observations were being made and experiments carried on, leading to the development of a new direct method of exploring for oil. Thus geochemical mapping, popularly known as soil analysis, was discovered and developed. Its conception was based upon the observation of gas seepages over or around oil pools. It was reasoned that if gas in quantities noticeable to the human senses escaped around an occasional oil pool, minute quantities of such gases should be found around all oil pools, provided a means for catching and measuring them could be found.

This article is not concerned with soil analysis but only with the chemical analysis of well cuttings and the interpretation of the results. But it is impossible to separate chemical well-logging from soil analysis because chemical well-logging grew out of geochemical experiments designed to support and prove theories explaining soil analysis hydrocarbon surface pat-



Analytical equipment used in separation and identification of lighter hydrocarbons in geochemical well logging.

OIL WEEKLY EDITION

BAASH-ROSS News

BAASH-ROSS TOOL COMPANY • LOS ANGELES • HOUSTON • NEW YORK

A MONTHLY BULLETIN COVERING NEWS OF EQUIPMENT AND OPERATIONS IN THE PETROLEUM INDUSTRY

NEW! "UNITIZED" BLOCK ASSEMBLIES SAVE VALUABLE DERRICK SPACE

Compact, Rugged, This B-R Development Adds Extra Feet to Portable Rigs

A troublesome drawback in the use of slim-hole drilling rigs, portable pulling outfits and similar equipment is the limited working height of the derrick. This reduced working clearance in many cases prevents the use of longer, faster-to-handle pipe lengths . . . and slows down all operations because of the constant danger of running into the crown.

But now you can add extra feet of usable working height to your rigs . . . extra feet of space that will enable you to handle longer pipe lengths—to work faster without risk of pulling into the crown . . . by using one of the new Baash-Ross developments—BAASH-ROSS UNITIZED BLOCK ASSEMBLIES!

Not only are these Unitized Blocks far more compact than conventional types, but they are also more *versatile*. Using the same Block unit, you have a choice of either a Hook Assembly or Link-Adapter Assembly—whichever best meets your requirements. These assemblies are interchangeable by simply pulling the coupling pin and replacing one type assembly with the other. Thus, should you buy say the Hook Assembly to meet your present requirements and later find that a shift in type of operations makes the Link Adapter Assembly more practical, you can change from one to the other *without the expense of replacing the Block!*

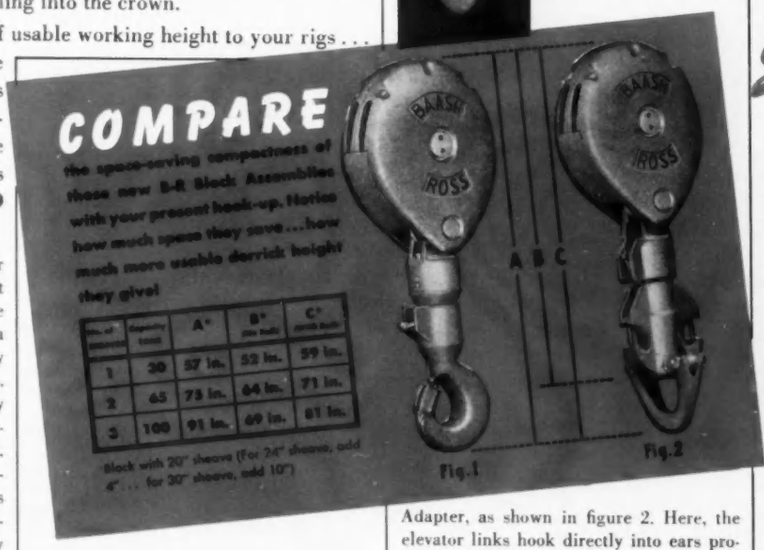
NINE BLOCK SIZES

The Block itself is unusually husky and compact and is available in one, two, or three-sheave types, each with a choice of 20", 24", or 30" diameter sheaves, giving a selection of *nine* different block sizes to exactly fit your requirements.

Rated capacities are 30, 65 and 100 tons, with a 3 to 1 safety factor based on the yield point of the material. That's ample strength to handle just about any drilling job you can drum up for a slim-hole outfit—and is ample, also, for practically all types of production work!

WITH UNITIZED SPRING-LOADED HOOK

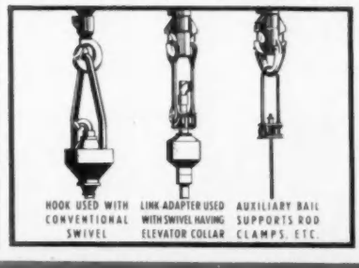
Wherever the conventional Hook connection is desired between the Block and rotary swivel or elevator links, the assembly with the spring-loaded Hook as shown in figure 1 is the one to use. The Hook itself is free-swiveling . . . and is mounted on ball thrust bearings easily lubricated through an outside grease connection. When no swiveling is desired, the Hook can be locked in any one of *four* different positions by simply throwing a built-in locking pin!


COMPARE
the space-saving compactness of these new B-R Block Assemblies with your present hook-up. Notice how much space they save . . . how much more usable derrick height they give!
A B C
BAASH ROSS
Fig. 1
Fig. 2

No. of Sheaves	Capacity Tons	A"	B"	C"
1	30	57 in.	52 in.	59 in.
2	65	73 in.	64 in.	71 in.
3	100	91 in.	69 in.	81 in.

Block with 20" sheave (For 24" sheave, add 4" . . . for 30" sheave, add 10")

But that's not all. Note, in the inset, the special automatic latch for locking the Hook in closed position—an important safety point, and a big convenience. When open, this latch acts as a guide for picking up swivel and elevator links, then *automatically* snaps shut as the links drop into the curve of the Hook. The latch *can't* open under load, insuring safety in rough work!


HOOK USED WITH CONVENTIONAL SWIVEL
LINK ADAPTER USED WITH SWIVEL HAVING ELEVATOR COLLAR
AUXILIARY BAIL SUPPORTS ROD CLAMPS, ETC.

WITH SPRING-LOADED LINK ADAPTER

▶ **Where maximum space-saving compactness** is desired, you get it with the B-R Block assembled with spring loaded Link Adapter, as shown in figure 2. Here, the elevator links hook directly into ears provided on each side of the adapter where they can be easily locked in place by bolts. By equipping the swivel with an elevator collar, the same elevators that lift the pipe serve also to support the swivel, thus eliminating the extra space otherwise occupied by a hook.

This Link-Adapter unit has the same free-swiveling feature as the Hook Assembly and can be locked in any one of four different positions by simply throwing a built-in lock. The Adapter can also be equipped with a bottom bail as shown to facilitate auxiliary operations, such as supporting tubing elevators, etc.

CHECK THESE HEAVY-DUTY FEATURES

Now, how about construction? Here's an inside look that will show you how this Block is *engineered* right up to the second for the heaviest, hardest usage.

First, it has fewer parts than most types and is as tough and compact as a welter weight. *That means money saved on maintenance and replacement.* No need to point out how vital that is today! Side plates are solid one-piece rib-reinforced steel castings, through which pass center pin, coupling pin and top pin to make the unit rigid and twist-proof top to bottom. Individual sheave bearings are of the heavy-duty roller type with separate grease fittings and ducts to insure positive lubrication to *each* bearing. Unique cage design of the bearings permits a greater number of rollers to be used than ordinarily possible, *increasing load capacity without increasing bulk.* Guards protect each sheave and can be quickly removed for easy threading of the line, saving crew time when rigging up and dismantling.

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All bolts, pins, nuts, grease fittings, etc., are completely streamlined into the side plates so that there are no projections anywhere to catch on *anything*—the derrick, workmen's clothing, or obstructions in the rig! This is one Block that's *completely* streamlined at every point for maximum operating safety.

Your Baash-Ross representative will be glad to go into the full details concerning these Unitized Block Assemblies . . . to explain the *many* other exclusive and advanced features which make these Blocks stand head and shoulders above the field for all your slim-hole drilling and portable well pulling operations. Plan to get in touch with him *today*—or write Baash-Ross direct!

THE SPECTROPHOTOMETER, *long an important tool in metallurgical and chemical laboratories, is now playing an increasingly important part in simplifying analysis work in the petroleum industry. Several majors are reported using it for rapid, accurate analysis of core and soil samples and of oil field waters. A new Spectrophotometer, recently announced, incorporates many important developments in Spectrophotometric design that particularly recommend it for such petroleum work.* **(No. 314)**

BAASH-ROSS

EVEN IN A DEPLETED FIELD, geologists state, over half the oil remains in the ground adhering as a film to the individual sand grains. It is the practice in some fields to inject water into the sands to "wash" this oil loose and drive it to the well bore. A recent report discloses that oil recovery by this method can be greatly increased simply by adding small amounts to chemicals known as "wetting agents" to the injected water. In one instance cited, substantial increases were obtained with as low as 0.1% concentration of wetting agent. **(No. 315)**

For additional information on these items, send on a post card or letterhead your name, address and key number of items that interest you.

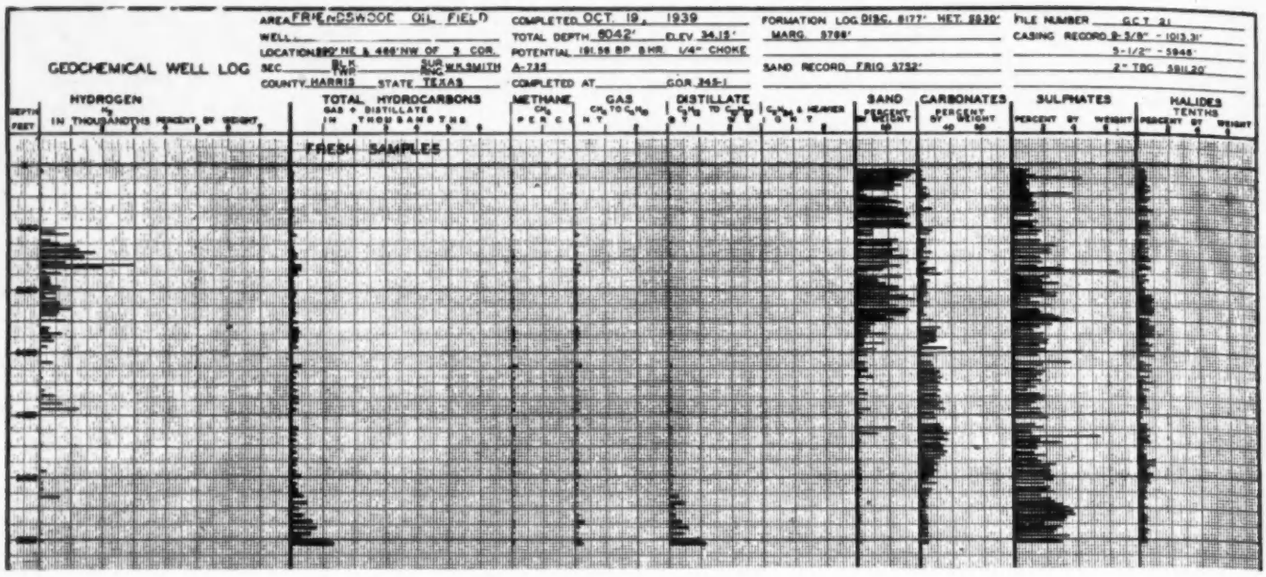

FIGURE 1

This is a typical log of a well in the center of an oil pool. The hydrogen curve shows a peak, high in the hole, and drops off to negligible values as the producing horizon is approached. The hydrocarbon curve shows increasing values from 5000 feet down to production. The heavy fraction predominates in this log indicating an oil horizon.

terns, by carrying the diagram or pattern into the third dimension in an attempt to trace the surface hydrocarbons to their source. The outcome of these experiments was highly gratifying to the men interested in this research, in that it proved beyond a doubt that hydrocarbons found at the surface above and around oil pools were definitely related to the oil in place. But, more than this, these subsurface geochemical studies brought a new tool into being for use in oil exploration with benefits hitherto not found in any other method. Chemical well-logging, however, does not claim to supplant other forms of well logging, but it offers itself as an excellent correlative tool in oil-well testing, which has the important advantage of forms of information which greatly increase the scope of other methods as well as acting as a check method.

One observation which may now be made from analyses of the cuttings of a drilling well and plotting their hydrocarbons and other values progressively, is that at any given point there may be found evidence of the presence of oil or gas below. In studies made of many wells it has developed that each type of well had its own peculiar chemical value curve, whether it be a producer-situated well inside the field, a producer near the edge of the oil, a dry hole just outside the oil area or dry hole far from any production. Study of these curves, moreover, soon disclosed that it is possible to detect the approach of the drill toward a body of oil or gas several hundred feet before the stratum has been reached by the drill. Sometimes hints of the deeper oil or gas body may appear as far as 1000 or 1500 feet above the pay. Furthermore, as the drill approaches the pay, a break-down of the hydrocarbon values obtained by the analysis of the cuttings may yield indications of the character of the deposit, whether it be heavy or light oil or gas.

The commercial value of this ability of the chemist to sense the approach of the drill to an oil or gas body is far reaching and has many ramifications, some of which have become even more important, now, with the increasing scarcity of steel. The first use of chemical-logging that comes to mind commonly is that it may be an insurance policy against completing a dry hole by reason of stopping the operation too soon. A chemical log warns the operator that somewhere, not too far beyond his bit, oil or gas will be found and tells him not to quit drilling until he has reached and tested it. Thus, the fear of missing the "farmer's sand" is eliminated. On the other hand, if the well has reached the objectives intended for it and the chemical log is still negative, the operator is assured of the uselessness of additional drilling, and is saved needless expense.

But suppose that the well is to be drilled to granite, or otherwise through all strata which could possibly yield oil or gas. What use then would chemical well-logging have that would justify its cost? In the first place chemical warnings of the approach to oil or gas usually come far in advance. Other means of testing for oil, by lacking in that characteristic, are like a station master who says to the traveler, "Get out on the platform—your train is in and is leaving now!" or "Your train has just gone through." On the other hand, chemical logging, with its prewarning ability says, "Your train is coming, get your baggage together and get ready." To get down to facts, chemical logging will tell the operator whether that sand his drill is approaching really carries pay or not. Thus if negative indications occur, the rotary operator can pass up a core he would otherwise take. One or two such cores saved would pay for the chemical log. Likewise, the cable-tool operator carrying open hole and approaching an interesting sand, would know whether to run casing to protect the sand while testing or to drill ahead and save the labor and cost of material required, should he run casing. If he were carrying water from a higher sand, he could drill through the next sand which, if barren of oil or gas, would probably carry water, and thus one string of casing would serve to shut off two or more water sands.

Very frequently a well may be drilled through a zone which usually pays off but which in this

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instance lacks porosity. This nonporous spot, especially if the pay zone be a limestone bed, may cover only a few square feet of area. In such a case, examination of the cuttings would be futile, for where there is no porosity there is no free oil, and without free oil the operator would be foolish to set casing and test. Chemical logging, however, reveals the approach to this oil zone many hundred feet above actual oil horizon, and shows its near presence when the drill comes opposite it. No other exploration method can do this, and identify a pay zone laterally from a barren point without the presence of free oil in the well itself. There are many oil fields in all sections of the country in which wells have passed through tight formations, showing poor indications of oil (especially in limestone beds) where production from the tight formation has been discovered almost by accident by the apparently foolhardy operator taking a long shot and testing a very poor show. Lately, however, such production, often prolific after shooting or acidation, has been brought in as a result of chemical logging; and in many cases possible reserves for future testing are filed away among the records of the oil company using this service, without the present necessity of testing.

Occasionally an operator will drill a well in wildcat territory and, by the use of chemical log find that the well might be just outside production limits of a pool. Naturally, the chemical log will not point the direction to the pay area, but it will give clues to relative distances. In such case, the operator, who with his chemical log is working in only one dimension (vertical) can fortunately extend his exploration efforts in the other two (horizontal) dimensions by use of surface methods (soil analysis) and find out just where this adjacent oil pool is and how much area it covers. By this means, he is often able to deal for any good acreage which he does not presently own and, by another test well, properly located, turn defeat into victory.

In analyzing cuttings during drilling of an oil well, the lighter hydrocarbons show the first "pick-up" indicating the oil sand being approached, but as the well approaches the oil sand more and more closely, if the well is to be an oil well, the curve of heavier hydrocarbons will begin to pick up and develop. If a gas sand is being approached, however, it will be so indicated by a "pick-up" only in the light fractions.

After the drill passes the pay horizon, the hydrocarbon values should drop off almost immediately but this does not always happen because: (1) in the case of normal cable tool drilling, cavings or free oil from the pay zone will continue to be caught and mixed with the new cuttings from the bottom of the hole until the operator sets casing and cuts the pay zone off from the new drilling; or (2) in the case of normal rotary drilling cuttings of the hole below the pay are washed upward by the drilling mud circulation past the pay zone, and the samples obtained at the surface continue thus to be contaminated, until the pay zone is sufficiently mudded off to kill it. In either event, there is a marked fall-off of values the moment the pay zone is passed, indicating the fact that the well is past the pay. However, the values remaining for a while are apt to be high enough (were they found on the opposite side of the pay) to be cause for much encouragement, but those false high values must not be taken at their face value until they have reached their lowest point and have started substantially to increase again. If then, this low point is reached and a new up-curve begins, the operator may look for a second body of oil or gas and should not stop drilling until he has found or passed it.

There are certain inorganic analyses which fit into the chemical log picture and aid in the interpretation and these are used as supporting evidence. There are also other inorganic analyses which

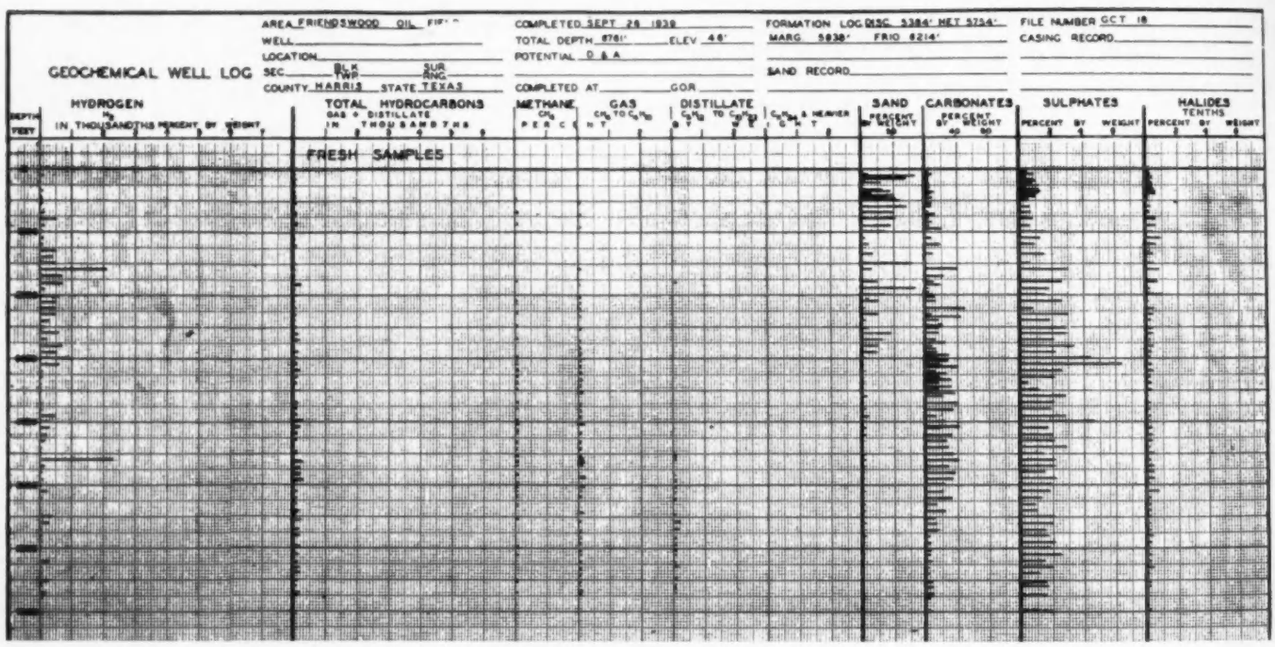

FIGURE 2

This log shows a well close to the edge of production. The hydrogen maximum can be postulated at about 5000 feet with the values decreasing to negligible amounts as production is approached. The hydrocarbon values show a more gradual increase than those in the Figure 1 well with significant values appearing much higher in the hole. This is brought out vividly in the "oil" curve. This well runs lower structurally than the Figure 1 well and has a much lower potential.

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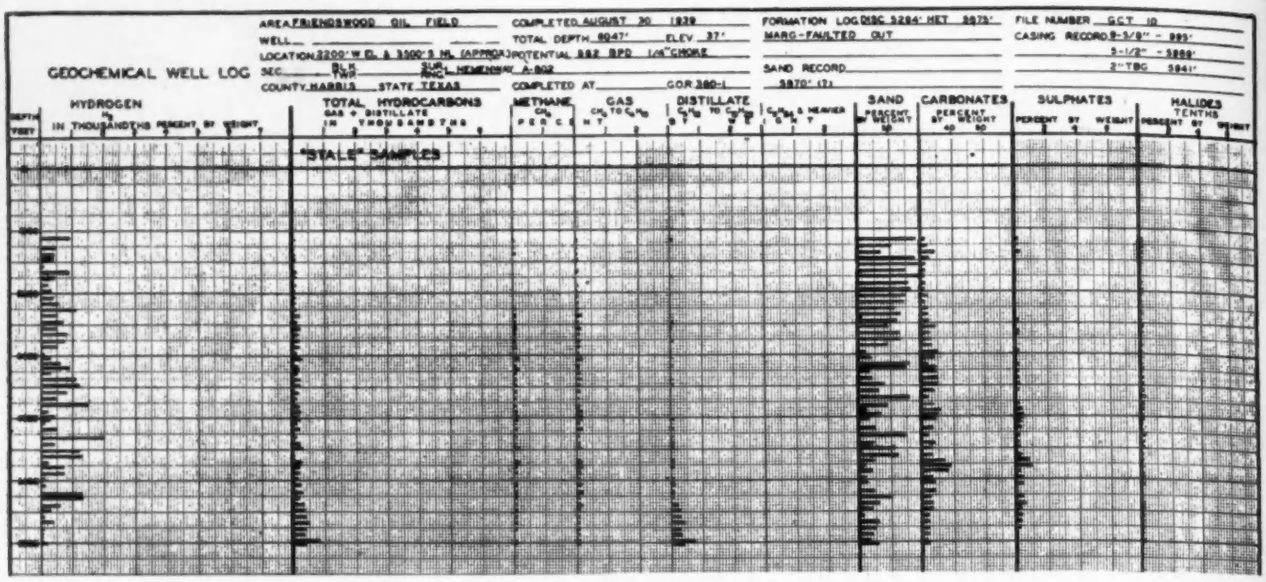


FIGURE 3

This well is outside production in the Friendswood field. The hydrogen curve lacks any defined pattern. The hydrocarbon curve shows significant values at 4600-4900 feet, but these are due to lateral migration, and drop off below that depth.

may be made use of in stratigraphic correlation problems. These are of more value in the Gulf Coast area of young formations than they are in the "hard rock" country in other oil producing areas, where strata are more easily recognized and correlated.

Highly carbonaceous shales frequently occur which yield very high hydrocarbon values, but could never be expected to yield commercial oil by oil well methods. These can be recognized for what they are, however, by the fact that there is no hydrocarbon build-up above them in the overlying sediments.

Thus far in the development of this new well logging technique, no method has been evolved to tell just how far ahead the indicated production will be found except that the hydrocarbon build-up is gradual until within a short distance of the oil, from which point the curve increases with rapidly multiplying ratios and heralds the imminent approach of the pay horizon.

Half-pint samples of well cuttings are taken at intervals from 20 to 40 feet and shipped to the laboratory in ordinary sealed glass jars for analysis. These samples should be taken immediately when recovered and shipped at once in order to prevent deterioration. Analysis should be made within 72 hours for best results.

In the course of analysis, measurements are made of hydrogen (evolved during analysis), dry gas, gas distillate, and oil. In addition, other analyses are made which are entitled "M.X." All values are plotted from the above analysis including a graph of total hydrocarbons.

Favorable indications are shown by a clear-cut hydrogen bulge in the upper part of the well and by a definite smooth hydrocarbon increase from 500 to 1000 feet above the producing horizon. In the case of hydrogen, the curve should drop off and stay low immediately above the bulge. In the case of a well being inside the producing area but close to the edge, the hydrogen bulge appears much farther down the hole and the hydrocarbon increase starts much closer to the surface. In a case where the well is near production but outside of it, the hydrogen curve will develop close to the pay and the hydrocarbon curve will run above normal for the entire depth of the hole. Irregularities in all values indicates generally unfavorable conditions.

Acknowledgments

The writer wishes to acknowledge with thanks the use of three illustrations from Subterrex and one illustration from Geochemical Service Corporation, with interpretations by Michael DiCesaro, chief chemist of Geochemical Service Corporation.

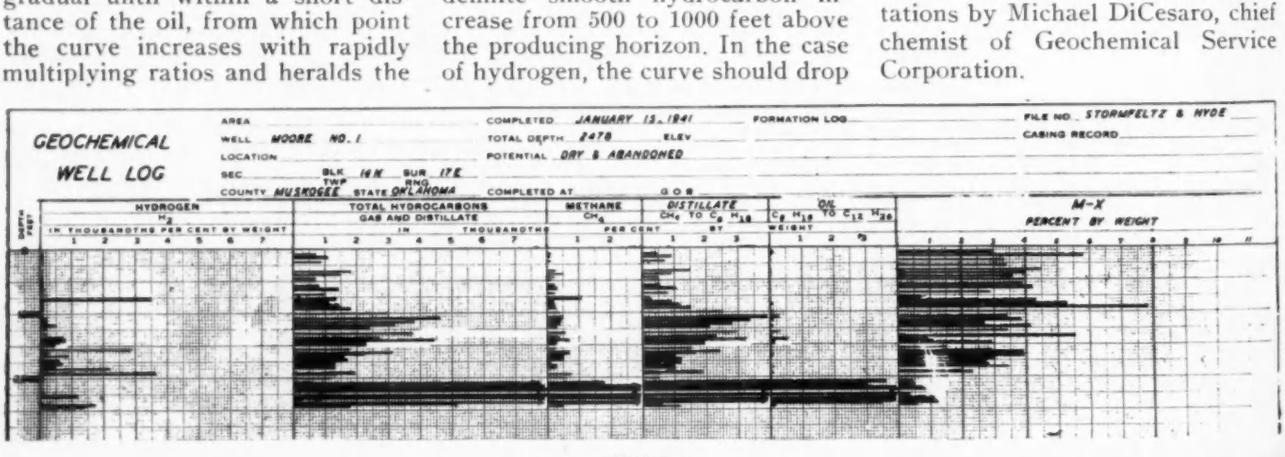
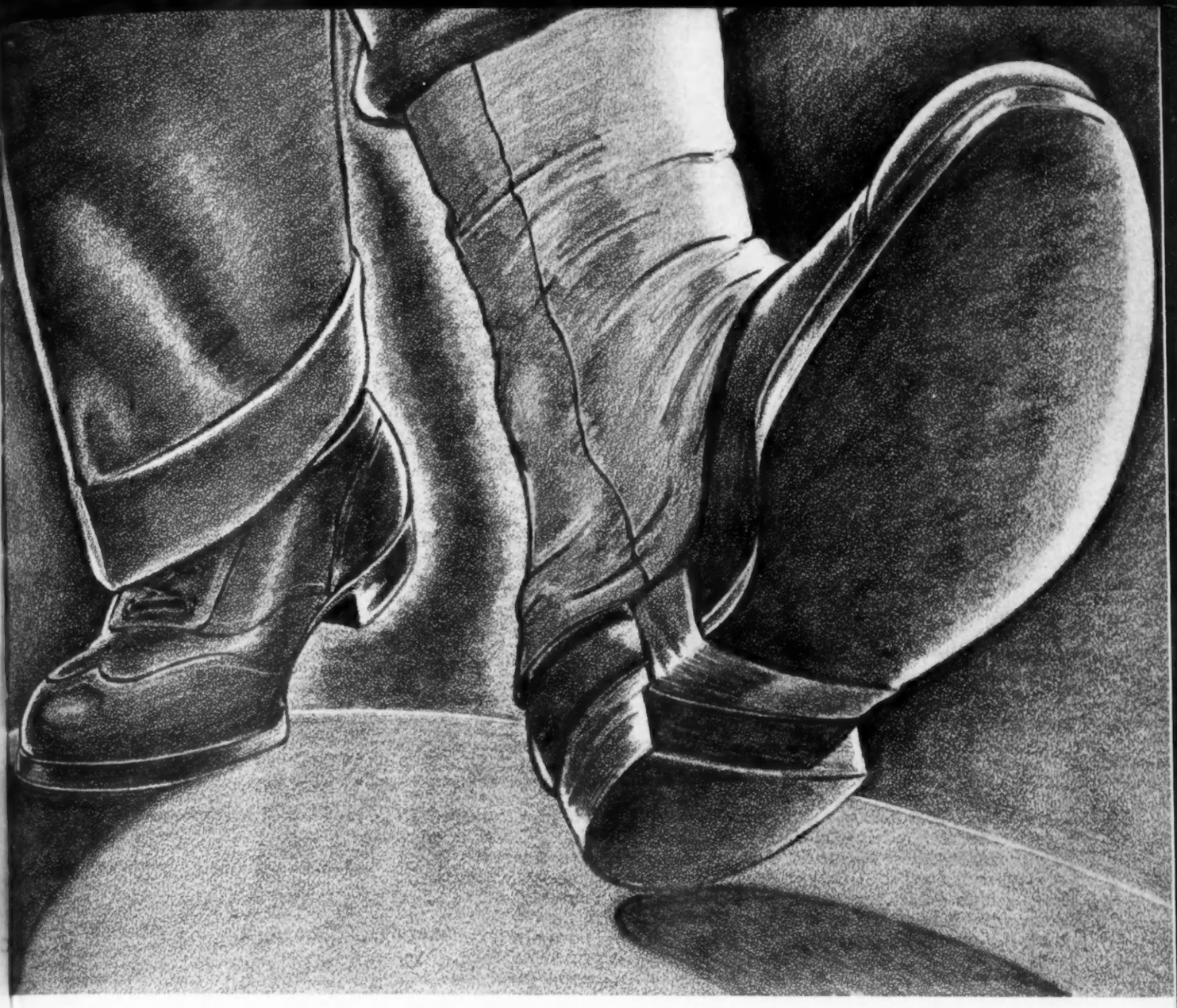


FIGURE 4

The hydrogen curve in this log is very erratic. The oil curve shoots out abruptly at 2050 feet, indicating a dead or shale oil. The M.X. curve shows well to be within 1000 feet of production.



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Ever since we can remember, our most important job has been selling you our equipment. Manufacturing the product, delivering it and following up with service were, of course, vital factors in the job; but they normally presented no problem. By comparison, they were routine.

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Today, the picture is suddenly and drastically changed. Today, the shoe is on the other foot. Through no choice of our own, our No. 1 job is not to sell you something . . . and your No. 1 job is not **who** you're going to buy **what** from. We've both got another job to do, and we're proud of the fact that you're just as interested in getting it done as we are. We're glad we're both on the same side. We're proud to be in the same boat with you.

As long as the shoe stays on the other foot we're going to put all we have into this new job of ours. It may not interfere too much with our regular job of selling you our products, manufacturing, delivering and servicing them. We sincerely hope that it won't.

One thing is certain, however: We're going to get this new job of ours done . . . and properly done. And, when it's finished, any interruptions it may have caused will be wiped off the slate, and we'll be back on the old job full time . . . putting everything we have into it, as we have done for 45 years, to sell you . . . and serve you . . . and please you.

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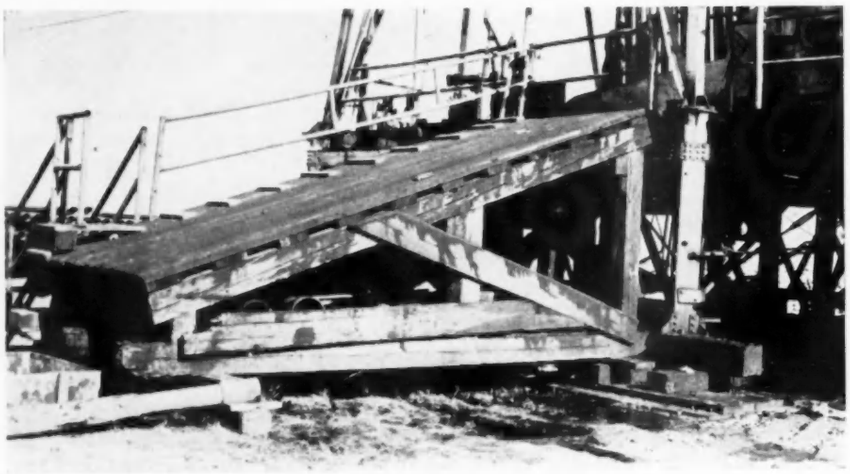
PARKERSBURG

PRACTICAL OPERATING HINTS FOR

1. MATERIAL HANDLING

Flooring Below Ramp Provides Storage Space for Auxiliary Equipment and Replacements



Addition of lower supporting members permits flooring of space below inclined section and handling of items which otherwise would require special skids.

THE use of loading ramps to facilitate the moving of heavy equipment to and from the floor of drilling rigs, particularly those having high floors, has become increasingly popular during the past several years.

One operator in West Texas has increased the value of the ramps in use on his drilling rigs by building a bottom and partial siding on each one. The enclosure provides a handy place where odd tools, tool joints, pipe or casing subs, and other less-frequently used material may be stored.

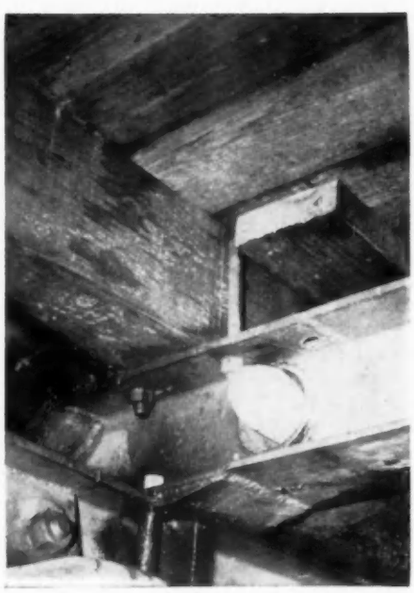
Since the base of each ramp is provided with skid timbers, the entire structure, including the stored material, may be hoisted upon a truck and hauled away at one time.

2. STEAM LINES

Skid Member Carries Main to Drawworks

SUPPORTING, concealing and protecting the steam main as it enters the derrick, one company carries the line inside the heavy tubular cross member of the skid on which the drilling engine is mounted.

The steam line is carried through the skid, and blanked at the end with a bull plug. The skid cross member is slotted at the point where the riser to the throttle is tied in, this being welded in place and fitted with the usual flange below the throttle tie-in. The slot is wide enough to permit the steam riser to shift under expansion, but prevents it from rotating far in either direction, speeding hook-up.



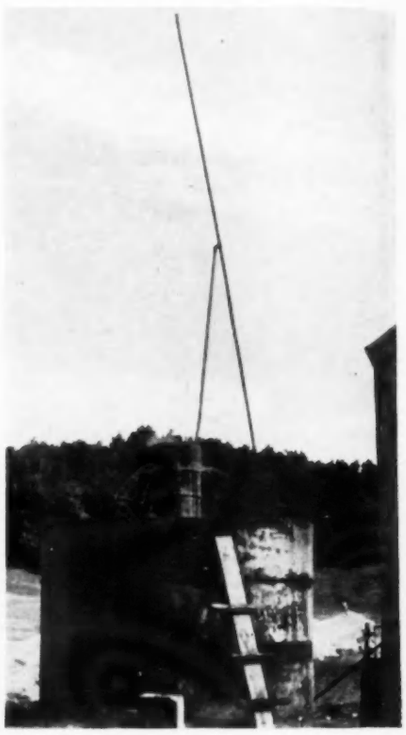
Plug seals free end of main carried in hollow engine skid brace.

At the edge of the skid the short stub is fitted with flange or quick-acting union, so that when on the move the horizontal stub of line within the skid and its attached riser remain a part of the skid unit, and are usually moved without breaking any of the joints except the one at the edge of the skid.

Carrying the line within the skid cross member keeps the line off the floor, requires but a minimum of exposed hot pipe, and, in case of leak or breakage, the cross member tends to conduct the leakage away from the working floor.

3. COOLING WATER

Adjustable Pressures Maintain Spray Head



Perforated drum under pressure acts as cooling water spray head.

TO control and maintain desired back pressure on the cooling system of an internal-combustion engine powering a cable-tool rig, Lupfer Drilling Company uses an adaptation of the grasshopper leg type of water control employed in maintaining water levels in salt-water-separation tanks.

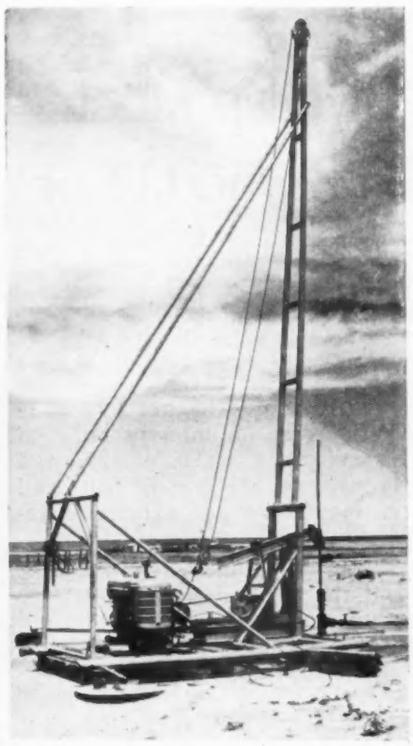
The outflow line from the engine

THE DRILLING RIG . . .

branches through a tee with one line terminating in the grass-hopper leg, height of the side outflow being adjustable and the straight section providing air relief and insuring against air-lock. The other line is tied to the oil drum mounted over the cooling tank, holes in the side of the drum permitting the water to spray out evenly and thus be cooled as it falls into the collecting tank. The drum into which the water flows is, of course, closed at the top, so as to provide the desired back pressure to insure spraying.

4. WATER SUPPLY

Unitized Pump Set Provides Rig Supply



Pumping and pulling shallow water wells is handled by unitized rig.

IN ORDER to cut lease development costs to a minimum, one company has developed an efficient portable light rig for use in both pumping and pulling the shallow water wells that are drilled at advantageous points throughout the active area.

The unit consists essentially of a shop-made, all-welded pipe skid base upon which is mounted a 30-foot A-frame mast, the latter being hinged at the bottom so it can be laid back on the rear support while moving it between locations. Upon the base is permanently mounted a small pumping jack, its gear box connected by V-belt pulleys to a small multi-cylinder engine.

One of the principal features of the unit is that it is rigged up (on the clutch side of the engine) in such a way that merely by installing an auxiliary sheave and another set of V-belts, the engine may be switched from pumping to pulling purposes. Clutch and brake on the engine take-off are used while pulling the well.

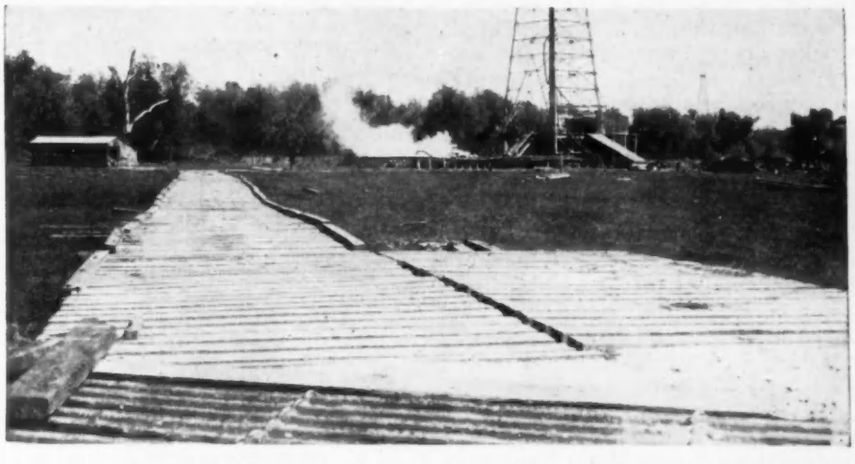
Since the unit is compact, and self contained, it takes very little time, and little manual assistance to move it from one location to another, set up, pull up mast, run tubing and rods, and then shift the power to the small pumping unit.

5. TRANSPORTATION

Sectional Roadways Cut Building Time

PLANK roads made from 12-foot sections of 3-inch by 10-inch by 8-foot planks are being widely used in the Old Ocean, Texas, field. The planks are nailed to foundation pieces and bolted to curb pieces on top. The sections are easy to move, lie flat on the ground, and the foundation pieces overlap at each end to give stability. Ordinary double-track roads must be completely dismantled when moved.

This portable board road furnishes easy access to drilling rig in all kinds of weather. It is built in 12-foot sections and can be taken up and moved to new locations. By moving road in 12-foot sections less lumber is wasted and the job is completed much more rapidly, since ordinary double-track roads must be taken completely apart, nails pulled, and rebuilt at new location. Each section is composed of four 4-inch by 8-inch by 12-foot timbers next to ground; to these are nailed the 3-inch by 10-inch by 10-foot crosswise planks. The rail on each side, 3- by 6-inch, is bolted to each cross piece and prevents trucks and automobiles from skidding off, as well as bracing the entire section. Sections without side rails may also be laid together near derrick to form turnaround. —*W. M. Kelly, Bay City, Texas.*



Erected in units capable of truck handling, this type of "paving" for marshy land is quickly shifted and readily laid to speed hauling of equipment to job.

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

Hoarding of *Scrap* Must Stop

By ELTON STERRETT
Equipment Editor

STEEL scrap is as vital to successful war effort as man power. Scrap must continue to pour in to the furnaces in an uninterrupted stream if steel making is to keep up with the war demands made upon it. To this end the government is taking steps to prevent hoarding of scrap materials just as it is proceeding against other hoarding.

In the search for available steel scrap, surveys were made of the automobile "graveyards," and machinery set up whereby any unit failing to sell its scrap cars at a fair price might be adequately dealt with. The first of such recalcitrants in the Chicago district was made aware of the national stand when his entire stock was requisitioned—a matter of some 150 tons—and he was paid established scrap prices not only for his stock of abandoned autos, but also for his stock of salvaged stocks.

Scrap dealers and oil companies holding disproportionate stocks of "salvaged" pipe and obsolete machinery have not yet been offered the alternative which was afforded the auto "graveyard" dealers, but it is evident that, unless augmented stocks are voluntarily forthcoming, some concerted national effort to secure scrap will soon be necessary. The scrap dealer plays an important part in the mechanics of getting scrap back to the mills. Elimination of only those recalcitrant or misinformed few who pad their "salvage" piles in the hope of receiving higher prices will by that much restrict the normal trade channels. Every oil company dealing with such a dealer should exert every effort possible to see that all such material, not immediately usable in its present condition, be designated as scrap and forwarded to the mills.

"Graveyards" such as this bury, though above ground, much steel which is no longer usable in its present form, but which, if burned over, would afford much steel scrap in form desired by mills.

Field "Graveyards" Give Up Much Needed *Scrap* When Burned Over

AFTER the loose and in many cases forgotten iron and steel scrap on the leases is all collected and oil industry participation in scrap furnishing relies only on the prompt forwarding of repair and replacement scrap as it is formed, it is expected that the demand will then necessitate conversion to scrap of much material now stored and carried on company inventories as usable. Careful inspection will in nearly every instance prove that the material in question has deteriorated through storage or while still in service past the point where it is economically sound or practically safe to re-use it.

Where the iron or steel parts of such obsolete equipment are so surrounded by wood as to require excessive labor expenditure to reclaim the metal in its original state, the oil industry may well take example from the railroads, and burn the discarded equipment, afterwards salvaging the metal from the ashes—as is common practice on the railroads with abandoned freight cars, fire freeing bolts and iron hardware not otherwise reclaimable.

Old bull wheels, calf wheels, band wheels and similar outworn equipment may be piled and burned, without reducing the steel mill scrap value of the metal reclaimed appreciably, and at a labor cost but a fraction of that incurred were the wheels dismantled and attempts made to salvage intact the shaft, flanges, bolts, nuts and washers.

Steel is indispensable to war effort, scrap is imperative in steel making, and any steel that can be reclaimed must sooner or later be made available. Bonfires in oil-field scrap yards, although not yet heralding victory, may in some small degree contribute to ultimate victory.

California Operators Organize Fields for Big *Scrap* Drive

California Oil & Gas Association and Oil Producers Agency Will Direct Effort

CALIFORNIA oil producers are being asked to initiate their "scrap metal" drive to supply the nation's war furnaces through field organizations, each field to develop its own field leadership and management. Management of the drive for scrap in the California industry is by the California Oil & Gas Association and the Oil Producers Agency of California.

In a joint communication to the state's operators, the associations point out: "We are proceeding upon the theory that the presumptively correct program to accomplish desired results is for steel to be sold at scheduled prices, under free enterprise and proper competition, through brokers, dealers, or 'junk men,' giving them a fair profit.

"We have sent you the price schedules. The price f.o.b. Los Angeles runs $17 to $22 according to quality, less cost of preparation, which means cutting into lengths not over 4½ feet, the thickness or width not over 18 inches, less profit margin for the scrap dealer.

"Brass, copper, aluminum and zinc, if any, is to be removed and sold by the pound.

"The dealers should get a full load at each visit. For those companies having only a part of a ton, or only a few tons, it will be advisable to gather the scrap at a central point.

"In some states a rapid-fire program has been launched for collecting scrap and this has resulted in immediate accumulation of many piles of scrap, too rapidly for the trucks or railroads to haul them away. The result has been that watchmen are being hired to prevent theft, while the scrap is waiting for transportation.

"Gather your scrap in a safe place. Sell it to dealers at the proper price, allowing the dealers a proper handling price. But stipulate that it is sold as scrap, and must be delivered to the furnaces, and not held to be haggled over as 'merchandise.' Clean up your own field, and specify that your scrap really reaches the consumer.

"In 'cleaning up' your field, it is vitally in the interest of the war effort to junk your obsolete equipment. The thrifty habit of keeping old equipment on the bare chance that it might be used some day, may well be set aside in favor of providing steel for war. Thousands of companies, in all industries, are doing this. One company sold the steel out of the counter-balance boxes on its walking beam, and filled the boxes with sand. Every pound of steel counts.

"The alternative is to sell direct to the steel furnaces. We are advised that they have agreed to buy by the truck load, and although effort has been made to block this, at least one steel company is reported to have agreed to buy from trucks, and even to buy by the wheelbarrow load.

"The steel companies are short of steel. If they really mean business they will receive steel from your own truck, if properly prepared, and give you a check for it. If you want to haul it to the steel furnace, phone and tell them how much you have, and sell to them direct. If you want to sell through a dealer, get your fair price. But do it promptly. The need is great."

Contributors were urged to utilize trucks moving empty toward the basing points to conserve transportation in the movement of scrap.

GEORGE C. GIBBONS

Executive Vice President of the Texas Mid-Continent Oil & Gas Association has been named Technical Advisor and Senior Petroleum Specialist with the Industrial Salvage Section of the Bureau of Industrial Conservation.

Gibbons Appointed to WPB Salvage Section

GEORGE C. GIBBONS, executive vice president of the Texas Mid-Continent Oil & Gas Association, has been placed in direct charge of industrial scrap collection in Texas, New Mexico, Colorado, Louisiana, Mississippi, Oklahoma and Arkansas, under appointment from George T. Weymouth, chief of the industrial salvage division of the Bureau of Industrial Conservation, Washington.

Gibbons has been given the title of Technical Advisor and Senior Petroleum Specialist for the industrial salvage division of the bureau, and will serve as a dollar-a-year man in this new post, the duties of which will not conflict with his present position with the Mid-Continent Oil & Gas Association. Scrap collection activities in the states within his district will be directed from the office in Dallas.

Scrap NOTES

Get in the Scrap

• • • *The Bureau of Industrial Conservation states that 19 furnaces are shut down because of scrap shortage. Since at least 15 days are required to put a furnace again in production, scrap shortage is as effective as sabotage in cutting down critical steel stocks. Scrap hoarding is passive-sabotage.*

• • • *Steel mills used an average of 3818 carloads of scrap per day during February, or 152,000 long tons every 24 hours. Much of this scrap was secured by scrap collection campaigns from industrial and domestic sources not normally furnishing scrap in volume. Efforts already put forth must be redoubled to maintain this scrap flow until war industries get into volume production. A ton of scrap today is worth ten next October. Get in the scrap—NOW.*

[*Continued from page 24*]

factured. These valves are manually set in the open position and, when the tank has filled to the desired level, they are tripped by a float. A spring-loaded valve shuts off the stream of oil entering the tank which is full and directs it into the next tank. These valves operate satisfactorily in clean non-corrosive oils; however, if the fluid be corrosive, or has a high paraffin content, trouble may be experienced. The use of these valves saves pumper labor in that the pumper need not be at the battery in order to "top out" a tank.

Overflow Lines. Overflow lines are designed to accomplish the same purpose as do fill valves. The manner in which they are connected divides them into two groups, i.e., those which are connected only between adjacent tanks, and those in which all tanks are connected to a common line. In the first type, it is possible only to flow oil from any one tank to an adjacent tank. In the latter type, oil may be directed from any one stock tank to any other stock tank. In order to enable the operator to open one tank without losing the valuable vapors from the other tanks, it is necessary that these lines be equipped with valves or a liquid seal. A locking valve is generally required by the pipe-line companies.

Overflow lines reduce pumper labor and also the number of times a thief hatch must be opened.

No matter what equipment might be installed in tank batteries, it will not be successful unless it has been thoroughly "sold" to the field personnel. Until the men who must operate the equipment are convinced of the worth of conservation of gravity and of the utilitarian features of the equipment installed, it will not operate successfully. They must also be well acquainted with the operation, maintenance, and repairs which may be required. One of the most convincing proofs to offer in evidence for conservation of gravity is the record of corrected API gravity of oil sold before and after installation of pressure equipment. If this cannot be obtained, comparison can be made between the gravity of a sample of oil, cold-treated at the well head, and the gravity of the sales.

Conclusion

In brief, what the author has endeavored to say is this. Conservation of our natural resources is important, especially so at this time. The losses sustained in handling this nation's oil represent an enormous sum of money. A small operator or the owners of a small lease can well afford to take part in a gravity-conservation program. If only for a selfish motive, all producers should attempt to prevent evaporation losses at lease tank batteries for the following reasons:

1. There are many tank batteries at which the API gravity of the oil sold could be raised 1 degree. Additional revenue amounting to nearly 5 percent would result.
2. The corrosion of metal tanks should be greatly reduced by the exclusion of oxygen from the tanks.
3. The hazards attendant to gauging the tanks would be reduced. This would eliminate expensive accidents attributed to breathing toxic vapors.
4. Devices such as overflow lines and automatic fill valves reduce pumper labor as well as promote conservation of gravity.

The goal of all those interested in gravity conservation is a system which is entirely closed, in which the oil is continually held under a slight pressure. However, until this goal is achieved, there are practical methods of effecting conservation of gravity at lease-tank batteries. Finally, like many other ideas, it must be sold to those who are to use the equipment before actual conservation of gravity can be effected.

★ WRITE ★ WIRE ★ PHONE

It's a HONEY!

Here's a photograph of what might be called a contented well. It's one job H. B. Moulter & Sons of Beaumont, Kansas, won't need to worry about for the duration.

The unit is a 14DC JENSEN powered with a Model A Ford engine. The well is 2750' deep, equipped with ¾" rods, 2" tubing and 1¾" working barrel. The stroke is 48" and the speed 21 smooth strokes a minute.

If you are looking for a way to cut expense and minimize trouble, consider this: We are the oldest and largest manufacturer in the world engaged exclusively in the manufacture of pumping equipment. If we can help you it will be good business and sound patriotism for both of us.

See your JENSEN dealer or send us an SOS at Coffeyville. We've worked with production men for 23 years.

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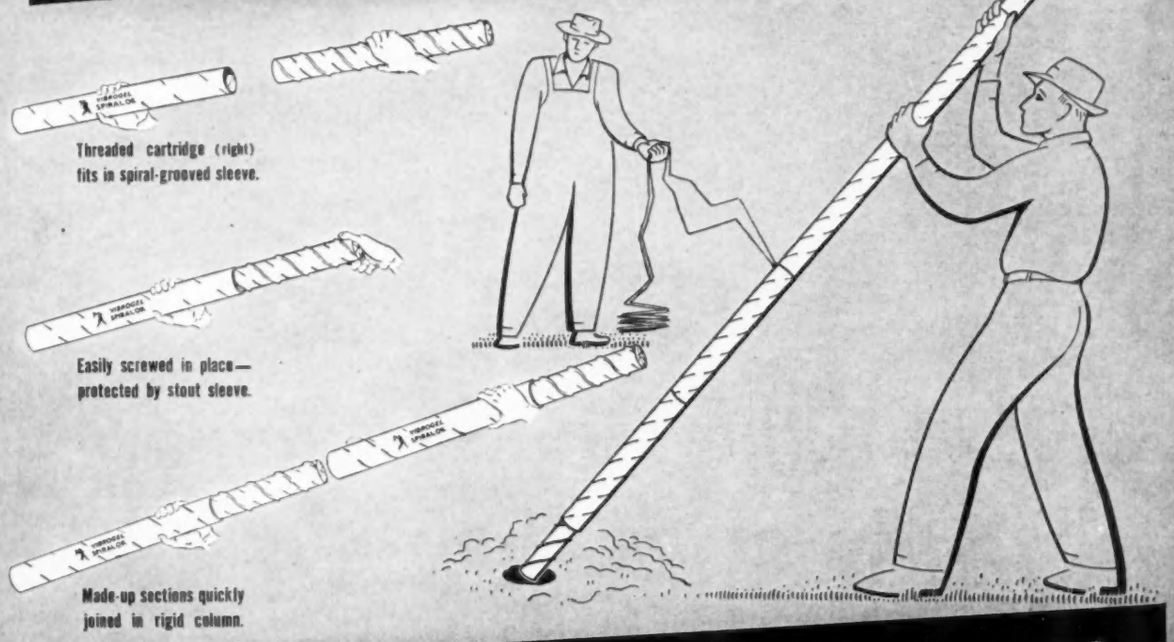
TIME IS TOO SHORT FOR OLD-FASHIONED SEISMIC METHODS


Threaded cartridge (right) fits in spiral-grooved sleeve.
Easily screwed in place—protected by stout sleeve.
Made-up sections quickly joined in rigid column.

Use SPIRALOK

Hercules' Sensational NEW TIME-SAVING SHELL

You never saw a string of powder so rigid. You never saw a seismic charge made up so quickly. And you never saw a simpler, more satisfactory method of handling dynamite in geophysical work.

The exclusive Hercules Spiralok shell is just what geophysicists have always wanted. The full-length threaded cartridges and sleeves are quickly and securely "made up." Joined together, they make a rigid column of dynamite that can be loaded easily through bridged and sandy holes.

And that's not all. The blasting cap can be placed in any cartridge in the column, and it gets extra protection from the full-length sleeve.

Hercules Vibrogels* are now available in the new Spiralok shell.

Time never was more important. Ask the Hercules man for the dope on this remarkable new "speeder-upper" for geophysical prospecting.

*Reg. U.S. Pat. Off.

N-21

HERCULES POWDER COMPANY
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Estimated Proved Petroleum Reserves in the United States

(Barrels of 42 gallons)

STATE	Proved Reserves as of January 1, 1941 (1)	Proved New Reserves Discovered and Developed in 1941[2] (2)	Production During 1941 (B. of M. Preliminary) (3)	Proved Reserves as of January 1, 1942 (Col. 1+2 less 3) (4)
Arkansas	306,218,000	15,126,000	26,327,000	295,017,000
California	3,291,382,000	262,028,000	230,263,000	3,323,147,000
Colorado	23,223,000	2,095,000	1,875,000	23,443,000
Illinois	315,305,000	152,547,000	134,138,000	333,714,000
Indiana	13,703,000	15,804,000	6,634,000	22,873,000
Kansas	692,088,000	80,968,000	83,261,000	689,795,000
Kentucky	40,999,000	213,000	4,762,000	36,450,000
Louisiana	1,215,459,000	230,583,000	115,908,000	1,330,134,000
Michigan	34,579,000	37,402,000	16,361,000	55,620,000
Mississippi	40,242,000	55,279,000	15,314,000	80,207,000
Montana	89,443,000	4,207,000	7,526,000	86,124,000
Nebraska	3,749,000	1,901,000	1,636,000	4,014,000
New Mexico	692,141,000	22,045,000	39,369,000	674,817,000
New York	65,001,000	.....	5,185,000	59,816,000
Ohio	30,284,000	10,460,000	3,340,000	37,404,000
Oklahoma	1,001,909,000	188,670,000	154,759,000	1,035,820,000
Pennsylvania	187,647,000	.....	16,750,000	170,897,000
Texas	10,623,516,000	859,709,000	507,584,000	10,975,641,000
West Virginia	52,444,000	1,000,000	3,433,000	50,011,000
Wyoming	304,821,000	28,926,000	29,694,000	304,053,000
Miscellaneous[1]	362,000	.....	63,000	299,000
Total United States	19,024,515,000	1,968,963,000	1,404,182,000	19,589,296,000

[1] Includes Tennessee, Missouri and Utah. [2] Column 2 includes proved reserves discovered in new fields plus proved reserves added by extensions of pools only partly developed a year ago, plus or minus any revisions in former estimates. Only a limited area is assigned to each new discovery even though the committee may believe that eventually a much larger area will produce, for in this report we are concerned only with actually proved reserves.

Half-Billion-Barrel Gain in U. S. Reserves Shown by API

THE pertoleum industry found 1,968,963,000 barrels of new oil during 1941, or 564,781,000 barrels more than the 1,404,182,000 barrels of crude oil produced during the year, the American Petroleum Institute's Committee on Petroleum Reserves has announced.

The net increase raised total known underground reserves of petroleum as of January 1, 1942, to 19,589,296,000 barrels.* Total reserves on January 1, 1941, were 19,024,515,000 barrels.

Most of the new oil was added through upward revisions of reserves in fields found prior to 1941, however. Further development of older fields revealed a net addition of 1,538,989,000 barrels of crude oil which had not been included in previous estimates for those fields because of incomplete development.

The committee's estimate includes only reserves in known and proved fields, and recoverable by present production methods.

Basic data for the report were developed by a number of subcommittees of experienced geologists and petroleum engineers in all important oil-producing areas. The committee signing the report included: J. Edgar Pew, chairman, Sun Oil Company, Philadelphia; R. F. Baker, The Texas Company, New York; Frank R. Clark, The Ohio Oil Company, Tulsa; Alexander Deussen, consulting geologist, Houston; G. Clark Gester, Standard Oil Company of California, San Francisco; F. H. Lahee, Sun Oil Company, Dallas; J. M. Sands, Phillips Petroleum Company, Bartlesville; Fred Van Covern, American Petroleum Institute, New York; Theron Wasson, The Pure Oil Company, Chicago; and Fred E. Wood, Standard Oil Company (Indiana), Chicago.

In column 1 of the accompanying table are the estimates of proved reserves reported by this committee as of January 1, 1941.

In column 2 are listed, for each state, the proved reserves discovered in new fields in 1941, plus the proved reserves added by extensions of pools only partly developed on January 1, 1941, in addition to revisions of proved reserves where increased knowledge of sand and recovery conditions has made changes in original estimates necessary. Thus, Column 2 shows all new oil found in 1941.

Production of crude oil during 1941 is shown in Column 3. These figures are preliminary totals compiled by the United States Bureau of Mines. They have been deducted from the sum of Columns 1 and 2 to obtain the estimated proved reserves as of January 1, 1942, shown in Column 4.

In the following tabulation the newly discovered proved reserves are segregated from the total new oil shown in Column 2 of the above table:

	Estimated New Reserves (new pools) Discovered in 1941
Arkansas	9,535,000
California	18,750,000
Colorado	.....
Illinois	62,946,000
Indiana	1,926,000
Kansas	23,673,000
Kentucky	213,000
Louisiana	47,915,000
Michigan	27,330,000
Mississippi	1,000,000
Montana	.....
Nebraska	1,550,000
New Mexico	1,201,000
New York	.....
Ohio	3,660,000
Oklahoma	58,911,000
Pennsylvania	.....
Texas	170,364,000
West Virginia	1,000,000
Wyoming	.....
†Miscellaneous	.....
Total U. S.	429,974,000

† Includes Tennessee, Missouri and Utah.

* The Oil Weekly in its Yearbook and Forecast Number, January 26, 1942, estimated United States Crude Oil Reserves at 19,524,075,000 barrels.

All Prorated States Propose Strict Adherence to OPC Allowables

In all prorated states, there will be in April a strict curtailment of output within the limits recommended by the petroleum coordinator.

The allowables in all cases take cognizance of production of condensate and natural gas derivatives, each state having had the responsibility of holding output of all petroleum liquids within the overall allocation assigned.

Official allowables are exactly the same as recommended by OPC in California, Kansas, Michigan, New Mexico, and Oklahoma. Louisiana will conform, although calculated production is a few hundred barrels above the round allocation of 313,000 barrels daily. Arkansas and Texas similarly vary from the schedule only a few hundreds of barrels but on the under side.

Unprorated Illinois probably will fail to produce the state's allocation, as actual output in the past month was 25,000 barrels less than the new quota. Unprorated Mississippi, however, may be expected to continue to overproduce, as output has been running about 35,000 barrels above OPC's March recommendation, in averaging nearly 90,000 a day, and the April quota is 4000 barrels less than that for March. (Mississippi authorities say there is firm demand for the oil that the state is producing, but OPC considers not only market demand but also conservation of producing ability to assure efficient and sustained production.)

Texas Curtailment Drastic

Fixing one of the lowest allowables for Texas in recent years, the Texas Railroad Commission issued its April proration order calling for an average net daily allowable of 1,132,512 barrels daily. This figure was arrived at after shutdowns were taken into consideration, less an estimated 3.92 percent underproduction of 42,289 barrels plus an estimated gasoline and condensate production averaging 96,000 barrels daily.

This brings the allowable for April 1500 barrels under the figure recommended by OPC.

The order prescribes 18 shutdown days, with the usual list of exempted fields where producing conditions are unusually difficult, but provides for only 9 shutdown days for certain listed fields where the crude is going into the manufacture of aviation gasoline, or is otherwise necessary to the war effort.

The aviation-crude fields are to be closed in on April 4, 5, 11, 12, 18, 19, 26, 29 and 30. The other fields are to be shut down on April 3, 4, 5, 6, 10, 11, 12, 13, 17, 18, 19, 20, 24, 25, 26, 27, 29 and 30.

Dropped from the list of aviation-crude fields were Rincon, Hoffman, Magnet and Loma Novia. Added to the list were Conroe and Odem.

The aviation-crude fields were listed in the commission's order as follows: District 2, Lolita, West Ranch, Heyser, New Refugio, Tom O'Connor; District 3, Amelia, Conroe, Cotton Lake, South Cotton Lake, Webster, Hastings, Lovell's Lake, Raccoon Bend, Raccoon Bend Cockfield, and Turtle Bay; District 4, Plymouth, Reynolds, Wade City, Turkey Creek, Orange Grove, O'Hern, Conoco, Driscoll and Odem; and District 8, Yates.

Louisiana, Arkansas and Kansas

The Louisiana Department of Conservation made clear in its April allowable schedule that contemplated allowable production will be in line with OPC recommendations. The official schedule assigns crude production allowables aggregating 321,466 barrels daily, including 74,471 for North Louisiana fields and 246,995 barrels for South Louisiana, but those allowables are expected to be underproduced 25,000 barrels (13,000 because of inability of some wells to measure up to the quotas and 12,000 because of pipe-line proration). In addition, the state is expected to produce 17,000 barrels daily of liquid hydrocarbons other than crude oil.

The Arkansas Oil and Gas Commission ordered 71,500 barrels daily of crude oil and condensate and 2300 of natural

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OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

New Allowables Indicate Production of Petroleum and Related Fuels to Be Lower and in Conformity With OPC Allocations in April

(Barrels Daily)

STATE	Recommendation of Petroleum Coordinator for March (Revised as of March 7; Crude only)	Recommendation of Petroleum Coordinator for April (Crude, Condensate, and Natural Gasoline)	State Allowable Beginning of April	Difference April Allowable From Recommendation	Percent Difference April Allowable From Recommendation
Arkansas	71,500	74,000	73,800[1]	— 200	— 0.3
California	627,000	659,800	659,800[2]	.....	.....
Kansas	245,800	253,400	253,400	.....	.....
Louisiana	314,700	313,000	313,466[3]	+ 466	+ 0.1
Michigan	49,500	50,200	50,200	.....	.....
New Mexico	100,200	86,000	86,000	.....	.....
Oklahoma	405,300	436,900	436,900[4]	.....	.....
Texas	1,338,600	1,134,000	1,132,512[5]	— 1,488	— 0.1
Total 8 Prorated States	3,152,600	3,007,300	3,006,078	— 1,222	— 0.03
Illinois	362,500	354,400	329,450[6]	— 24,950	— 0.7
Mississippi	53,100	49,800	88,850[6]	+ 39,050	+ 78.4
Other States	224,500	245,300	.....	.....	.....
Total United States	3,792,700	3,656,800	.....	.....	.....

[1] Includes 2,300 barrels daily natural gasoline.
[2] Distributed to fields by California Oil Producers.
[3] Calculated actual daily production of oil, condensate, distillate, and natural gasoline by estimating current production other than crude at 17,000 barrels daily, and by allowing for estimated underproduction of 25,000 barrels daily below scheduled allowable of 321,466 barrels.
[4] Includes 27,000 barrels allocated to natural gasoline and condensate.
[5] Calculated daily production of crude oil, condensate, and natural gasoline by estimating current, unprorated gasoline and condensate production at 96,000 barrels daily, and by allowing for underproduction of 42,289 barrels (3.92 percent) below scheduled state allowable of 1,078,801 barrels. Most Texas fields were ordered shut down 18 days: April 3, 4, 5, 6, 10, 11, 12, 13, 17, 18, 19, 20, 24, 25, 26, 27, 29, and 30.
[6] State not prorated; this figure daily average in four weeks ended March 21.

gasoline, a total of 73,800 barrels, or 200 less than the OPC allocation. The commission at the same time passed a resolution to stay within regular or revised OPC recommendations without exception. The agency ordered 80-acre spacing for the Dorcheat pool, Columbia County, in centers of north and south halves of governmental quarter sections, without exceptions other than through special hearings. Replacing former 40-acre spacing, the new spacing is the same as in the Macedonia pool, believed part of the same field. Priorities will be granted under the 80-acre spacing, OPC told the commission. They will be granted also for drilling wells in the McKamie pool, Lafayette County, drilled at centers of 160 acres or governmental quarter sections. Of the 28 oil producing pools in Arkansas, 13 are stripper well areas and 15 are supervised by the commission. Of the 15 pools, 10 were placed under lower allowables for April, the most important reductions having been those from 13,500 to 12,000 barrels daily in the Schuler Jones pool and from 18,948 to 17,798 in Magnolia field, Columbia County.

The Kansas allowable, up 7600 barrels from March, as recommended by OPC, makes no allowance for production from new wells, as experience indicates that output of new wells, now comparatively scarce, will be compensated by underproduction in established areas.

California Allowables

The Conservation Committee of California Oil Producers has recommended that April allocations be distributed in the same basis as for February and March, except for a liberalization of depth minimum allowances to all wells.

The committee proposes to increase depth minimums from 15 barrels daily for wells 1000 feet deep to 20 barrels, where capable of that production; the allocation graduating upward to 55 barrels daily for wells 10,000 feet deep instead of 40 barrels for 10,000-foot wells as provided in February and March.

Balance of the state's quota distribution would be determined by application of maximum efficient rate of production factors, together with special adjustments to meet requirements of the war effort and transportation factors encountered.

Kansas Lease Sale

E. H. Moore has disposed of producing properties in Zenith field, Stafford County, Kansas to Mabee Oil & Gas Company. Thirty-six wells were included in the transaction, these in Sections 12 and 13-24-11w. January production from the wells was 35,455 barrels.

Bert Childs Is Dead

W. L. (Bert) Childs, vice president and general manager of Reed Roller Bit Company, Houston, died March 23. His death was occasioned by heart trouble, made acute by the strain of recent efforts relating to the war manufacturing program.

A prominent, likeable figure in the oil industry since 1907, he was known as "Bert" by oil and equipment men everywhere. In recent years he was active in civic affairs and was a former president of the Houston Chamber of Commerce.

Bert was born on a farm at Union Grove, Illinois, and was 59 at the time of his death. He was educated in Illinois public schools and at the Northern Illinois College at Fulton. He came to Texas in 1905 to work for the Southern Pacific Railroad at Beaumont. In 1907 he moved to Houston and became connected with Gulf Pipe Line Company, rapidly rising to purchasing agent. Bert left that connection to become associated with the late Howard Hughes, Senior, as general manager of Hughes Tool Company.

In 1921 he entered the oil equipment business for himself. Four years later he joined the reorganized Reed Roller Bit Company as vice president and general manager. At the time of his death he was actively in charge of Reed's war production work.

During NRA days he was instrumental in organizing the American Petroleum Equipment Suppliers Association and served as president of this group. Last summer when the increasing war effort brought about a serious situation in the oil-equipment-manufacturing business, and a mass meeting of manufacturers from all over the United States was called at Fort Worth, he was unanimously chosen to head the meeting and to act as general chairman of a committee selected to deal with the question of materials.

Bert was Potentate of Arabia Temple in 1928. He was a director of the Houston Community Chest, member of the Houston Club, Bayou Club, Ramada Club and many other clubs and organizations.

W. L. (Bert) CHILDS

Texas Commission Wins In Two Proration Suits

Two proration suits were won last week by the Texas Railroad Commission. The E. C. Marrs case, involving proration orders as applied to the McElroy field in West Texas, reversed and rendered a trial court judgment which had restrained enforcement of allowable orders in that field.

In the other case which involved Conoco-Driscoll field in Southwest Texas, the Supreme Court of Texas refused the application for writ of error.

Continental Oil Company had contended that the commission could not cut back the Conoco-Driscoll allowable so long as it was producing without waste and there was a market for the oil. The trial court rendered judgment in favor of Continental, but was reversed by the Third Court of Civil Appeals which ruled that the commission can consider market demand for the state and then allocate the allowable to the various pools.

In the McElroy case the Third Court of Civil Appeals construed the statutes relating to proration and waste of oil as requiring the commission to first ascertain the market demand for the state and to then allocate without discrimination as between the fields in the state, and to then distribute the amount allocated to each field without discrimination as between producers in the field.

The Continental case, the opinion recited, "discusses what we regard as the proper interpretation of the proration statutes, which is the interpretation that the commission has continuously placed upon them."

Commenting upon the question of drainage, the opinion stated: "If appellees had drilled their lands in accordance with the applicable spacing rule at the time the adjoining owners so drilled their lands, the drainage and inefficient use of gas energy complained of would not now exist; and having failed to do so, we know of no rule of law or equity which would permit them to now produce more than five times as much oil as the proration orders prescribe and the present market for oil demands.

"Stated another way, appellees cannot voluntarily fail or refuse to drill their lands in accordance with the applicable spacing rule at the time the adjoining owners so drilled their lands, and then later demand and claim a greater portion of the allowable production because they had theretofore failed or refused to properly develop their lands so as to prevent the drainage and inefficient use of gas energy complained of. Such in effect is the basis of appellees' complaint, although they seek to modify it by the contentions that they have used reasonable diligence to develop in accordance with the rule, in which the commission has agreed or acquiesced, and that due to a decrease in market demand for oil, it is a useless requirement to compell them to drill more wells in order to get no larger or even a still lower allowable. The evidence does not sustain any such agreement with the commission, and this court has often held that neither the commission nor the producer can agree to violate the spacing rule. And while the commission cannot compel one to drill his land to the density prescribed by the rule, it has the authority to fix his allowable on the basis of the rule, unless he does so."

Oil Compact Body Studies Oil's "Obligations" at Spring Meet

Methods of correlating and computing oil reserve figures, which will be submitted to Petroleum Coordinator Harold L. Ickes, hit a snag at a meeting of the Interstate Oil Compact Commission last Friday in Little Rock, Arkansas.

Some difficulty was encountered in correlating the reserve figures because of the different bases used by the various states. Some of the states limited estimates to include productive acreage only. Others included prospectively productive areas and it will be necessary to revise these estimates before an accurate picture can be presented.

The legal committee continued work on a model conservation law. The purpose of this work is to devise a statute that will be relatively brief and completely intelligible to the average state legislator who is called upon to vote on the bill but may not be well informed on the oil industry. As one attorney expressed it, the job was to produce a bill of only one page. While this would be impossible, it was hoped that some shorter statute could be offered, shorter than those usually offered in states where no conservation law has been effective heretofore.

Another problem confronting the legal committee was that arising from federal regulation M-68, when it becomes impossible for an operator to obtain pipe to drill at least one well on the lease. Whether the operator would be forced to relinquish the property because the federal government would not permit him to fulfill his drilling obligations was the question. Members of the committee indicated privately that they expected to offer no formal comment on this question because it involved private compacts which are beyond the authority of the compact commission.

"Obligations Confronting the Oil Industry" was the subject of Don R. Knowlton, director of production for the OPC, Washington, principal speaker at the Saturday general session.

Other speakers at the Saturday general session were Wirt Franklin, director in charge of OPC district No. 2 at Chicago; Governor Homer M. Adkins of Arkansas; Russell Brown, general counsel for the Independent Petroleum Association of America; and John E. Howell, petroleum engineer and vice president of the Lion Oil Refining Company.

Howell discussed unitization and pressure maintenance of the Jones-sand pool, Schuler field, Arkansas.

How states may cooperate in the war effort by promulgating rules and regulations of OPC was explained by the regulatory practices committee.

Indiana Association Makes Depletion Allowance Protest

In a meeting at Evansville March 24 the Indiana Oil and Gas Association authorized a protest against abolishment of the depletion allowance.

The association's protest stated that "the burden of taxation borne by the petroleum industry is already so heavy that to abolish depletion allowance would in many instances eliminate all operating profits . . ."

Representative Beverly M. Vincent of Kentucky has indicated he will appear before the House Ways and Means Committee in behalf of operators seeking to retain the depletion allowance.

O. L. Sturbois, president of the association, said Indiana production during the first 15 days of March was at the rate of 17,520 barrels a day, or 600 barrels less than the new quota for Indiana, and that therefore no curtailment measures in Indiana will be necessary.

Sturbois reported that directors of the association are of the opinion that the 40-acre spacing rule is proving impractical in low-pressure, thin, tight, and lenticular sand areas such as Indiana.

Plan Santo Domingo Drilling Program

Dominican Seaboard Oil Co. expects to start a drilling program this year in Santo Domingo, where the company has been exploring lands comprising around 2,000,000 acres. The program has been delayed because of uncertainties in the national petroleum laws, although such difficulties are expected to be ironed out in the next few months. A few years ago the company drilled two minor producers in western Santo Domingo.

Guatemala Will Get Test During Year

A test is expected to be drilled this year in Guatemala by Carlos E. Dorion & Company, holder of a 140,000-hectare tract flanking the northern, western and southern shores of Lake Izabal. The concession, lying in the departments of Alta Varapaz and Izabal, was granted in December, 1938, and was extended by the government for another year in December, 1941. No well has yet been drilled on the tract by the company, although near the town of Estor on the northern lake shore a shallow dry hole was drilled several years ago by other interests.

Mene Grande Opening Field in Venezuela

A prospective new field in northern Anzoategui state, eastern Venezuela, has been opened by Mene Grande Oil Co.'s Quiamare 1, a wildcat 10 miles east of the Mene Grande pipe line and 31 miles north of El Roble field. Although yet uncompleted, the well recently tested 500 bbls of 38-gr oil through ¼-in choke from 7300 ft.

The well was drilled to 9055 ft in a well-defined, large anticline having an east-west trend, and is productive from several sands. It has been producing through a 3-in fuel line to the Mene Grande pipe line. About 2½ mi west of the well, No. 2 has been located. Interest in the discovery lies in the fact that it has located a structure 30 mi north of the Roble-San Joaquin-Santa Rosa producing region in eastern Venezuela. Proximity of the anticline to the Mene Grande pipe line means that a relatively short lateral would enable the oil to reach the Caribbean at Guanta.

Texas Petroleum Co. of Venezuela is moving in derrick for Cimara 1, a test of a structure about 3¾ mi west of the company's Caritos 1, a producer on the Temblador fault which is being reworked.

S. A. Petrolera Las Mercedes Co. has temporarily suspended Mercedes 3 in Guarico State, eastern Venezuela, at 1860 ft. Location has been authorized for No. 4 1 mi west of No. 2, the producer which is still under test.

Mexican Oil Stocks Decline During 1941

Mexican oil stocks, as reported on December 31, 1941, totaled 14,758,000 barrels.

Of the stocks on hand at the end of 1941, light crude accounted for 4,814,000 barrels, heavy crude for 3,480,000 barrels and miscellaneous products, 6,464,000 barrels.

Pemex, the government oil administration, had 10,750,000 barrels, International 1,127,000 barrels, Mexican Gulf 1,327,000 barrels, New England 150,000 barrels, Texas 160,000 barrels and Kern-Mex 129,000 barrels.

Light crude stocks increased during the year by 396,000 barrels over the total held at the end of 1940, heavy crude stocks by 271,000 barrels. Miscellaneous products showed a decrease of 135,000 barrels. This gave an overall increase for the year of 532,000 barrels.

The refined gasoline stocks on hand showed a decline of 283,000 barrels from the total at the end of 1940. Gasoline in storage at the end of 1941 amounted to 345,000 barrels, or sufficient for about 30 days supply of the domestic demand which requires around 12,000 barrels daily.

Crude gasoline, fuel oil, kerosine and lubricants stocks at the end of 1941 also showed a drop from the figures at the end of the preceding year. Crude gasoline was down 254,000 barrels, fuel oil 55,000 barrels, kerosine 12,000 barrels and lubricants 60,000 barrels.

Of the miscellaneous stocks on hand at the end of the year, fuel oil accounted for 1,950,000 barrels, gas oil 1,930,000 barrels, crude gasoline 408,000 barrels, crude kerosine 107,000 barrels, refined kerosine 54,000 barrels, lubricants 106,000 barrels, paraffin 12,000 barrels, asphalt 141,000 barrels. Various other products accounted for the balance under miscellaneous.

Colombian Exploration Continues 1941 Rate

Operations for the first quarter in Colombia include two wildcat producers, one on the Barco and the other in the Magdalena River Valley, and two abandonments. Exploratory drilling continues at the active pace set the latter part of 1941.

On the Barco concession of Colombian Petroleum Co.'s Socuavo 1, drilled to 9850 ft and plugged back to 9100 ft, is a producer still being tested following acidizing. The well, which is 8 miles northwest of Tres Bocas 1, is reported to have tested several hundred barrels

daily of 44-gravity oil in one test. Socuavo 1 indicates a new productive area on the Barco. No 2 is being rigged. North Sardinata 1 was suspended at 5000 ft in February. Tres Bocas 2-A is drilling below 9200 ft in schist, and No. 3 is located.

The other productive test this year is Casabe 2, drilled by Shell Oil Co. of Colombia on El Condor's 121,000-acre Yondo concession in the Magdalena River Valley. Casabe 2, drilled to 3670 ft, completed as a pumper of 20-gr oil. This is shell's second successful wildcat in the valley, Casabe 1 having been completed last October for several hundred barrels daily of heavy crude. Palagua 1, a test on the Obregon Arjona concession, held in the valley by Compania de Petroleo La Perla, was abandoned by Shell at 3550 ft in January. This month, Shell spudded another Magalena Valley test, El Doce 1, on a 47,784-hectare concession transferred from Compania Anglo-Colombiana de Petroleo last year. Compania de Petroleo La Estrella de Colombia, another Shell affiliate, is ready to spud El Dificil 1 on a 48,568-hectare concession in Magdalena department.

Del Carare Petroleum Co. is drilling below 4700 ft in McCarthy 1 on the east bank of the Magdalena across the river from Richmond Petroleum Co.'s abandoned Culimba 1. Tropical Oil Co.'s Cimitarra 1, on the Gutierrez concession in the valley, was reported drilling at 9500 ft early in January with shows of gas. Cimitarra 2 is expected to be spudded soon. On the Camacho concession in Bolivar department, Richmond Petroleum Co. had drilled Braval 1 to 2800 ft early in March, and No. 2 may be spudded in April.

API Crude Oil Test Committee Appointed

O. D. Donnell, The Ohio Oil Co., Findlay, has been appointed chairman of the 1942 Central Committee on Standard Procedure for Measuring, Sampling and Testing Crude Oil of the American Petroleum Institute's Division of Production. W. R. Trelford, Humble Oil & Refining Company, Houston, is vice chairman, and C. A. Young, is secretary.

Members of the committee, appointed by George A. Hill, Jr., chairman of the division's general committee, are: D. S. Bushnell, Northern Group of Pipe Lines, New York; W. M. Holland, The Ohio Oil Company, Casper, Wyo.; Nelson K. Moody, Sinclair Prairie Oil Company, Tulsa, and W. L. Stewart, Union Oil Company, Los Angeles.

Regional committees were named, as follows: California district, W. L. Stewart, chairman; Southwestern district, C. A. R. Trelford, chairman; Rocky Mountain district, Holland, chairman; Mid-Continent district, Nelson K. Moody, chairman; and Eastern district, D. S. Bushnell, chairman.

Chairmen of subcommittees are: Technical Subcommittee on Methods of Test for Crude Oil, J. B. Rather, Socony-Vacuum Oil Company, New York; Special Subcommittee on Centrifuge Pumps, O. D. Stallard, Magnolia Pipe Line Company, Dallas; National Subcommittee of Oil Accountants, A. L. Carlson, Standard Pipe Line Company, Tulsa; and National Subcommittee on Marine Transportation, C. A. R. Trelford.

"Mobilize to Win" Echoed at API District Meeting at Tulsa

Providing the most in petroleum products with the least amount of steel and other war essentials was the theme of the spring meeting of the Mid-Continent District, Division of Production, American Petroleum Institute in session at Tulsa, March 26 and 27. The "Mobilize to Win" slogan found its echo in every session. The same serious consideration of all the multitude of producing problems bearing upon the war effort was expressed in both paper and discussion.

Officers elected for the coming year include: Herbert Goodpaster, Kerlyn Oil Company, Oklahoma City, chairman; Coxey Evans, Cities Service Oil Company, Seminole, vice chairman for Oklahoma; R. B. Saxe, Gulf Oil Corporation, Pampa, vice chairman for Texas Panhandle; R. P. Moscrip, Shell Oil Company, Wichita, vice chairman for Kansas; H. F. Beardmore, Amerada Petroleum Company, Tulsa, secretary-treasurer, and George Berlin, Skelly Oil Company, Pampa, chairman of the advisory committee.

Each of the national-defense-forum speakers had current information of importance to this division of the industry. Unexplained data and references to priorities and restrictions were detailed and analyzed, with the speakers showing how each act fits into the broad war effort. Technical papers bore upon the problems being encountered in the producing areas. Progressive methods were described and analyzed with specific attention being given production developments.

The oil industry has a real job to perform in furnishing necessary war products, and therefore should not sit back and take a defeatist attitude. Instead it should keep awake, keep thinking and keep doing, especially with regard to increasing wildcat prospecting activity. Oil men should realize that they are not as bad off as some industries on which a complete moratorium has been declared, for it can still conduct its operations to a considerable extent. Do not be too quick to condemn government orders, but study them first from the viewpoint of the war needs before doing so. By preserving the proper mental attitude the industry can do much to assist itself and the war effort.

H. R. GOODPASTER
Chairman, Mid-Continent District, API Division of Production

The speakers were D. R. Knowlton, director of production for OPC and Wirt Franklin, director of District 2 for OPC, both of whom expressed their appreciation for the spirit of cooperation and the hard work being performed by the industry committees.

Knowlton specifically discounted the doubts existing in some quarters relative to the limitations on the quantity of steel made available to the industry. There simply is not enough to go around, he stated. There has been a great deal of misunderstanding relative to the restrictions of M-68 and it has been declared unsound. It is not an iron-clad rule, Knowlton stressed, and urged that operators avail themselves of the opportunity of obtaining exceptions. In this connection, he pleaded for the use of application for exceptions on a field basis.

Franklin stated East Coast rationing would remain as long as the war lasted and that it was possible it would extend to regions with adequate nearby supplies as tank cars are transferred to the Atlantic region. He expressed the belief that considerable relief in the Eastern shipping situation would be worked out by the industry committees.

L. F. McCollum, president, The Carter Oil Company, termed the effort of the oil industry in the war as constituting a "petroleum front" and by its very nature as being an effort of vital importance. In order to execute our tasks effectively and efficiently it has been necessary to alter our peace-time economy to a war-time economy, and to measure our effort in terms of result rather than in dollars and cents.

It is by this standard, he pointed out, that total efficiency can be obtained. Each individual is responsible for conservation and efficient use of essential and strategic materials—and this must be done without sacrificing in any way the producing aims in the front. Operations must be readjusted, innovations must be adopted to meet the changed standards, and ingenuity must be encouraged. The time has come, he added, when the oil man can no longer remain at his desk, fret about shortage of materials, or be disturbed about influences or restrictions in his business. The most oil for the least steel must be delivered.

There are a number of ways in which these aims can be advanced. They could include consolidation of properties, consolidation of operations such as gasoline

plants operating adjacent, but neither at capacity, or through the consolidation of other facilities. Useless drilling must be eliminated in order to conserve, and only those wells drilled where a maximum amount of oil will be produced per minimum steel poundage. And this produced oil must be readily available to a point of requirement, otherwise the drilling was of little avail.

In speaking of drilling since M-68, McCollum pointed out the drop in drilling in the Mid-Continent and in the eastern section of this area, Illinois, Indiana, Kentucky and Michigan. In the latter area, drilling has fallen 49 percent, in the former about 34 percent. In the southern Mid-Continent and the Gulf Coast the decline was 31 percent.

In looking at the picture of future development, it was shown that in the combined Gulf Coast and Mid-Continent regions that the anticipated wells to be completed within pools during 1942 would total (60 percent of 1941) 11,596 wells. Also, the 1942 available 40-acre locations proven as of January 1, is 13,978 and extending this into 1943 shows 2382 40-acre locations, neither total including discoveries. Additional acreage will be proved during 1942 by wildcat discoveries, hence the drilling program will extend past the limits that could be established by reference to currently proven acreage only.

A breakdown of production indicates that in District 2 OPC, under normal development, as contrasted with production under the rate of development imposed by M-68, would be 62,000 barrels daily more in mid-1942, approximately 90,000 barrels more at the end of 1942, 95,000 more in mid-1943 and 100,000 barrels more at the end of 1943. However, estimated production under the rate of development imposed by M-68 declines by mid-year 1942 approximately 160,000 barrels or 14 percent as compared with December 1941, 232,000 barrels or 20 percent at the end of 1942 and 294,000 barrels or 25 percent at the end of 1943. In this regard, it should be remembered that 40-acre wells produce less during their early life per acre than wells more closely spaced. The need for new reserves in central and eastern Mid-Continent areas is apparent. He concluded with the thought that our sole aim must be to provide oil as required, but with a minimum consumption of steel.

Additional remarks on the seriousness of the industry's reserve situation were heard in an evening session from E. L. DeGolyer, director of conservation for OPC, who also discussed the necessity for eliminating the waste of surface gas and expressed the thought that gas/oil ratios be limited to not more than twice the volume of dissolved gas contained in a barrel of crude oil.

Abstracts of papers read at the meeting follow:

Sabotage in the Oil Industry

By W. G. Banister
Special Agent in Charge Federal Bureau of Investigation Oklahoma City

Sabotage is a coined word, derived from shoe and interpreted as being an agent or method of keeping down normal life and bettered existances. Since the conception in France of such an agency it has spread over the world to be used by a majority of nations, particularly those of the Axis type. Saboteurs are generally recruited from the criminal element, as this type already has a natural tendence toward subversive and anti-social tactics. In order to combat this undermining and dangerous element, the Federal Bureau of Investigation has established numerous protective measures and through the aid of special training and conferences has acquainted many citizens with the aims of the organization, these being combined in a successful effort toward minimizing sabotage activity. In fact, FBI has been so successful in its effort that there has been no sabotage in the United States that can be directly attributal to organized foreign agents. This despite investigation of untoward incidents.

Of particular interest to the oil industry are certain danger points. These are chiefly pipe lines, pump stations, and storage facilities. Special effort must be made to protect these vulnerable points. Guards now are being used in a great many areas, these being supplied by the companies in contrast to the use of soldiers as guards as was done during the last war. So far the guarding has been entirely satisfactory.

Use of API Specifications in Standardiaztion of Oil Well Pumps

By B. L. Remick
Gulf Oil Coropration, Tulsa

In streamlining its oil field pumps, Gypsy Division of Gulf Oil Corporation found that a lack of uniformity and interchangeability among pumps and pump parts made a program of standardization difficult. Also, descriptions of pumps and the manners of designating dimensional data were extensive and involved. As a means of compression of terms engineers with the firm adopted API Standard No. 11-A, Sixth Edition, October, 1941, which gives the dimensions of sub-surface oil-well pump parts, including those previously published separately in Standard No. 11-A, Fifth Edition and its supplements, No. 11-A-1, 11-A-2, 11-A-3 and 11-A-4 and includes the changes and additional dimensional data adopted at the Tulsa meeting in May, 1941. Also, Standard No. 11-A, Sixth Edition, embodies a "Classification of API Oil-Well Pumps" and a Part Elements system of presenting dimensional data.

The main advantages to be gained by ordering pump parts by part element symbols is that this method insures API thread connections being obtained and for most of the parts covered by the specifications, complete interchangeability is assured regardless of manufacturer. The API designations, while not perfect, are a great improvement over the mere symbolic designations as applied by manufacturers.

Through the application of API designations, warehouse-stock cards, transfers, records, orders, invoices, etc., are greatly simplified and can be carried in print or writing in less space or upon smaller cards than by past generally used methods. Master diagrams of pump assemblies can be keyed to serve as references. Actual monetary savings by applying this device are considerable, this of course, depending upon scope of work and application. There is also the further advantage that through the condensing of descriptions, and reduction of parts to a standard basis, more men in the organization become familiar with a greater proportion of the parts and pumps in use.

While much has been done toward setting up dimensional data for oil-well pumps, there is considerable work remaining and it is with this thought in mind that some suggestions might not be out of order. One of the further advances along this line would be the inclusion of element designations for pump parts not as yet included in the scheme. The same applies to plunger bodies, ring, cup or repack type. These immediately foregoing suggestions are not included in the Sixth Edition of API Standard No. 11-A before mentioned.

Adoption of a system for designation of length of stroke of the traveling part for subsurface pumps has been recommended, present methods of specifying the pump length ordinarily refers to the actual barrel tube length. Such designation would make capacity calculations an easy matter. Appointment of a users committee has been recommended to API. This committee would consist of persons selected from the oil companies and its duties would be to cooperate with API Manufacturer's committee in working out dimensional data for parts which have no API specifications and in bringing to the attention of the manufacturers instances in which dimensions shown in the API specifications do not guarantee interchangeability of parts.

Pressure Maintenance in KMA Field

By William H. Rouzer, Jr., *Engineer K-M-A Pressure Maintenance Association, Wichita Falls, Texas*

The added impetus now being given higher recoveries by placing emphasis on declining reserves as against more efficient production engineering methods has resulted in a considerably closer scrutiny of methods for increasing ultimate recoveries. KMA is an outstanding example of a number of operators initiating a program to conserve a natural resource, and by efficient methods of recovery and re-injection of natural gas to assure an ultimate production of millions of barrels of oil over what would normally be obtained, and at the same time to save billions of cubic feet of gas at reservoir pressure.

KMA Pressure Maintenance Association was formed in the latter part of 1939 to coordinate the efforts of over 150 organizations operating 375 leases. Records of 1591 wells to 3850 feet resolved the fact that theoretical deductions were sustained in actual gas/oil ratios and in increased productivities.

Bottom-hole pressure decline in KMA was noted as swiftly declining early in the life history of the field: in 1938. This was due to formation characteristics of the 30,000 productive acres and to a condition of under-saturation with no free gas and with relatively low permeability. After reservoir pressures had decreased to 300 to 400 pounds natural drainage would account for only 5 to 6 barrels per day, a minimum production. With no active water drive, it was decided that re-injection into the complex anticlinal structure would result in production that could not otherwise be obtained.

Costs of equipment, gasoline plants, compressors, distribution systems, wells, etc., were proportioned between gasoline plants and the oil operators. Each operator pays in the proportion his wells bear to the total wells in his area,

termed units in the program. Over $3,000,000 is now invested in gasoline plants and gas-return equipment. There are 99 input wells, representing an additional $2,000,000 investment. Success of the plan depends upon the complete cooperation of all persons and firms involved, and this has been given by a large majority of the operators.

Results of pressure maintenance at KMA have as a rule been quite satisfactory. The ultimate result will be an enormous increase in the total oil recovered. Total production to January 1, 1942, in the program has been 34,842,616 barrels, an average of 1158 barrels per acre, 30,777 acres being considered in the operation. A total of 5,241,396,000 cubic feet of gas has been returned to the formation, which is equivalent to the sum total of returned gas in all of the six units. Gas returned per barrel of oil produced (December, 1941) averaged 397.1 cubic feet for the month.

The study of reservoir performance is a challenge to the petroleum engineer. No matter what his routine job is, what happens underground is pertinent to his business and it is his duty to develop facts which can be converted into sound economic practices. Management support of the engineer's progressive thinking, and promotion of a constructive open-minded attitude in the field, makes a background for cooperative projects and more efficient methods of production.

The API Simplified Casing List

By H. W. Ladd
Stanolind Oil & Gas Company, Tulsa

The actual formulation of casing specifications resulted from the Pipe Standardization Committee appointed in 1921 with J. Edgar Pew as chairman. Shortly thereafter, this activity was absorbed by the Institute and first published specifications were soon printed in 1924.

The revised and simplified casing list has now become the API Standard. As such, it represents the final cooperative effort of the manufacturers and users, and emphasizes a list of specifications reduced from more than 250 to about 95 items. A natural aim of this program was conservation of materials; this being fundamental to the objectives even prior to the advent of war. Now, with priorities and threatened shortages of various materials and alloys, it is a first duty to reduce to bare essentials the use of strategic materials.

Prior to the currently accepted list, and in response to this insistence in demand for a revised casing list, a definite program on casing simplification was adopted at Fort Worth in May, 1940, with the following objectives:

1. The adoption of a series of sizes, weights and grades containing the smallest number of items that will approximately fill any ordinary current and expected requirements.

2. So far as possible, the sizes and strengths should vary by approximately equal (percentage) steps or increments.

As a result of this adoption, a tentative list was approved in August, last, and given final approval at the San Francisco meeting in November.

The API specifications have the advantage of nationally accepted standards, and as such constitute a basis for purchases as well as list preparation. They provide interchangeability, reduce warehousing problems, limit stock volumes necessarily carried on hand and do these things without loss of quality. In spite of the immediately past drilling trends, toward "slim-holes," greater depths, and shallow projects the list includes less than half the number of items previously recognized without ignoring requirements.

As before mentioned, the conservation of alloy elements must now be a primary consideration. Casing strings should be designed in such a manner that a proper balance is obtained between the amount of alloying elements used and the total amount of steel required. In this way the war effort will best be served. API specifications for both product and performance provide all necessary facilities for determining this result. These specifications have all been tested by actual use many times.

The Economic Technology of the Water Drive — Its Application to Encroachment Water and Water Flooding

By Harry M. Ryder
Ryder Scott Company, Bradford

The driving power of water, whether of normal occurrence within the formation or artificially introduced with applied pressure is a vital force in present-day oil production. By means of this tool, ultimate production can be increased through the simple expedient of limiting production volumes to the rate of natural encroachment, or by injection of watering volumes when there is no normal water encroachment with fluid withdrawals from the reservoir.

The control of a water drive, encroachment or flood, is of economic importance for several reasons. These are:

1. It can enable oil to be brought to production from the tighter sands, oil not otherwise available.

2. It can make it possible to leave a minimum amount of oil in many of the higher permeability strata through which the water was passed.

3. It can minimize water handling, thereby reducing production costs.

Field and laboratory data go hand in hand in technological developments, and through a number of tests laboratory findings are translated into field methods. There is risk involved in drawing too broad conclusions from laboratory work, particularly when the mechanics of the tests are very different from actual field conditions. No one type of investigation is sufficient, and present detailed work is instrumental in offering advances in both laboratory procedure and in field practice.

Residual saturation of oil is a function of water velocity. This fact has been noted in both the Eastern floods and in the Bartlesville section of the Mid-Continent. The rate of the driving water depends primarily upon the pressure exerted against the injection head, on the permeability and distance the water travels. Additional factors are influential to lesser extens. It has been determined that under specific conditions, that a maximum ultimate can be expected when the velocity of the water is sustained at or above a specific rate.

It has been determined that a watered-out section of a pay strata acts as an effective block against oil movement. Actual cases have been noted that prove this contention; as when a well standing with a nominal head of water on the sand cannot later be returned to activity as a producing oil well. Water in movement through any sand seeks passage through the more open sections of the sand body, and from an encroachment front arrives at a producing well to add fluid volumes to normal production expense in addition to the trapping of crude in the tighter sections of the sand. This is a point that makes water control a relatively important function. A proper water velocity must be obtained to bring about a maximum recovery per unit of sand body. This control can be applied in a number of ways; through the use of controlled pressures, by means of packers, through plugging agents, by acid use in calcareous formations, through well locations, and through selective shooting.

Throughout the country, wherever water enters, or should enter, into the problem of producing oil, technical control of that water is essential to optimum production. Only in this manner can a minimum amount of oil be left unrecovered in sands through which water passes. Further, only in this manner can tight sands associated with high permeability horizons, have their oil content effectively displaced. And again, only in this manner can the water/oil production ratio be kept to a minimum. If, however, an oil-bearing formation should include a layer of extremely high permeability into which the entrance of water cannot be controlled, as in the case of some of the Venango sands of northwest Pennsylvania, any use of water may be impractical.

Practical Results of Vocational Training

By M. L. Powers
State Supervisor of Trade and Industrial Education, Stillwater, Oklahoma

In many cases industry has failed to develop man power either to replace normal vacancies or to provide the necessary leadership for the great expansions that take place. It is for this reason that we find ourselves today in an attempt to vastly expand industrial output with too few trained workmen. This circumstance has forced a national defense training program as an actual necessity.

Vocational training has served the national war effort by up-grading nearly 2½-million skilled workers. It has likewise provided pre-employment education or training for many others. These men, already having a background, will serve as basic material in the new employment programs brought about through reduction in labor through compression of man power.

The first adult classes in vocational training were organized in 1922, the classes consisting of refinery workers. Field workers took part in the training soon thereafter. As a result of workers taking part in this training, many case histories have been outlined showing pipefitters advancing to foreman, roustabouts to district superintendent and others to equally responsible positions.

It is interesting to note that much of the experience and materials gained in the development of the petroleum industry training program is being used to advantage in various phases of the national defense training program. The

petroleum industry training should be considered as a good start in its present status. However, it must be both expanded and improved.

Salt-Water-Disposal Systems

By H. H. Elliston
Sinclair Prairie Oil Company, Tulsa

Salt-water disposal, long an unpopular there to every branch of the petroleum industry, has undergone evolution from both the standpoints of the legal and engineering departments. From the latter angle, the mechanics of disposal have been investigated and refined, and various associations have been formed to operate disposal systems. In other areas, individual companies, where wells are sufficient in number and brine volumes are large, have installed separate systems. Also, in a number of instances salt water produced with oil is being returned to the formation as a water drive; and has proven effective.

In the matter of an association for the purpose of disposal of salt water, there are certain articles of "agreement" and the following represents a revision during the past five years of Kansas and Oklahoma organizations. They may be considered reasonably satisfactory. The name of the association, is of course, a matter to be decided upon. The parties to the agreement should be listed and their interests defined. The area under control of the association should be defined and the exact purpose stated. Plant facilities should be described and functionally outlined. The governing committee, designated by operators involved, should be established and the voting rights determined upon a basis of total investment cost, etc. Withdrawal privileges, construction costs, future construction costs, total investment account, the incorporation of new members, general operating costs and claims to be made against the association should all be agreeably outlined. This is a prerequisite to the next step, which is to induce all operators in the pool to subscribe to the unified plan.

A survey of the field, its brine volumes and pertinent data, when fully analyzed, determines the design of the proposed plant and system. In this, the fundamental consideration is the volumes of water to be handled. One or more disposal wells must be obtained and this is usually by conversion of an old producer although in many systems a new hole is drilled to a barren or exhausted formation.

Further consideration must be given the nature of the water to be disposed of, its possible action upon un-lined pipe, the use of neutral agents or protected fittings and special tubing. There are many choices in this regard, depending upon hazards and the system itself. Pumps, materials and a determination between gravity or pressure systems must be the result of study.

Following installation and placing of a disposal system in operation there are numerous reports that should be regularly made for adequate control of the operation. These must be varied to suit individual needs. Not only will these records be used in determining proportionate costs of operating, but analysis of these records will show how equipment is functioning and the general efficiency of the system. The reports are essential to the plan.

"Keep Gas in Solution" DeGolyer Advises Before ASME at Houston

Solve the gas-waste problem and the industry has solved its conservation problem, and to do this "Keep Gas in Solution" should be the first through the tenth commandment for all oil engineers. This was the message brought to the petroleum division of the American Society of Mechanical Engineers at its annual meeting in Houston last week by E. L. DeGolyer, director of conservation for OPC, as he recommended that the industry adopt a program of limiting gas/oil ratios to a 100-percent tolerance of the quantity of gas in solution with the oil. Since a barrel of saturated crude oil usually contains less than 800 feet of dissolved gas, this would restrict gas/oil ratios to 1600 feet per barrel of production.

The conservation director, who headlined a group of ASME speakers, stated there was little actual surface waste of oil itself. The loss between wells and refineries having been reduced from 6.2 percent in the early 20's to 2.15 at present. While urging that enclosed vapor tankage systems be used to reduce this volume of surface loss, DeGolyer devoted his remarks to underground waste, which he termed more prevalent and to a large extent preventable by using a few known engineering indices to determine effect of production practices on reservoir conditions.

Under prorated output the industry has come to realize that controlled production rates are the best means of eliminating bottom-hale waste and thereby increasing ultimate oil recoveries, but even under present curtailment some fields are producing with excessive gas/oil ratios. In Texas, some fields are being produced at a rate that will deplete them in 8 years, while others are on a 50-year depletion basis.

Admittedly, DeGolyer declared, there must be some loss of gas in producing oil, but any quantity of gas produced in excess of the amount in solution is waste due to improper completion or withdrawal rates. He denounced as ridiculous the practice of completing wells so the gas could be used as a lift to increase potential ratings although producing allowables would be far below that level, and urged that wells be completed with the thought of their probable allowable producing rate in mind.

All gas should be utilized and then waste will be cured. The first use for gas is to increase the ultimate recovery of oil, which requires low gas/oil ratios and re-injection of all excess volumes into the formation.

Abstracts of technical and operating papers on the petroleum section program follow:

Design of Oil-Field Tank Batteries for Conservation

By Ross M. Stuntz, Jr.
Gulf Oil Corporation, Gypsy Division, Tulsa, Okla.

Prevention of evaporation losses from crude oil in storage is conservation in its truest sense. A majority of these losses can be economically eliminated by a redesign of tank batteries to reduce vaporization of higher gravity components of crude oils. Small leases contribute their share toward the gigantic waste of the most valuable constituents, and even on such leases, experimental installations have revealed that proper tankage and gravity-control equipment will effect sufficient additional revenue to pay for their cost of installation in a short period.

Vaporization of crude oil depends upon the following factors: 1. pressure; 2, surface exposed for vaporization; 3. temperature; 4. agitation. If these factors can be controlled, losses suffered by vaporization can also be regulated.

Vaporization is inversely dependent upon the pressure maintained in the tanks, that is, the higher the pressure, the less the vaporization. Properly selected tanks allow maintenance of a pressure of at least 16 ounces per square inch, and the pressure must be maintained constantly to obtain maximum benefits. Each time a tank in a closed pressure system is opened, a considerable quantity of vapor is lost. The goal, therefore, is a completely closed system in which tanks are never opened except for cleaning. Except in isolated and experimental cases, this goal has not been reached, and at present is modified in practice to consist of not opening tanks more than is necessary.

Devices used experimentally to maintain completely closed pressure systems are interesting, because they constitute definite steps toward conservation. While not receiving general acceptance from the industry, many merit mention, and will undoubtedly be common tank equipment in the future.

Special attention has been given to developing devices which permit gauging fluid in tanks without releasing pressure or vapors. Other efforts have developed pressure thief hatches and back-pressure valves, as well as devices to allow opening tanks separately to prevent release of pressures in adjacent tanks.

Until the ultimate goal of tank storage systems which are entirely closed and in which oil is continually held under slight pressure is achieved, there are practical methods of effecting conservation of gravity in present lease tanks. All producers, if only for selfish motives, should attempt to prevent evaporation losses.

The Metering of Petroleum Products as a Measure of National Defense

By L. R. Van Arsdale
Pittsburgh Equitable Meter Company

The petroleum industry produces, refines, and transports a vital product in National Defense, and conservation of this product, as well as of the man-hours required to produce it, is being accomplished by use of meters for its measurement.

Of principal interest is the positive displacement type meter whose use in

various capacities from well to refinery effects saving in lease-storage equipment, gathering systems, and man-hours. Measuring of oil as it leaves the separator by flowing into a common header through a positive displacement meter eliminates all lease tanks, as well as the vast gathering systems, pumps, and manifolds. In such a system, considerable savings in vapor are realized as the oil is retained under pressure until stabilization at the gasoline plant. Special equipment is being developed to remove water and emulsions before measuring, without using lease tanks, thus releasing large quantities of steel.

Another meter, the differential or orifice type, is often used to determine failure on the pipe line due to a break between stations, relieving unnecessary time spent by line-walkers in efforts to locate the failure. The positive displacement meter also is used in savings on operation of crude oil pipe lines by providing accurate measurement on incoming lines or tributaries to measure indivadual incoming streams, thereby saving in either man-hours or in tankage and manifolding.

In refineries various gasolines, kerosines and fuel oils are pumped through the same line with several products in sections of the line at one time. Accurate volumetric measurement is made for proper dispatching by use of positive displacement meters at the input and at all take-offs on the line.

Previous to the present emergency, use of the positive displacement meter has grown, as result of savings on vapor losses, decrease in man-hours, and reduction in steel requirements. The meter is an important item during the present emergency when conservation is most needed.

Automatic Control of Natural Gas Fired Boilers

By Charles W. Parsons
Republic Flow Meters Company, Chicago

Constant steam pressure is essential for best turbine and engine performance, and this goal, together with highest efficiency of combustion, is assured by properly designed and maintained automatic combustion control. While particular arrangements differ, they usually include devices to accomplish three purposes:

1. Maintain constant steam pressure.

2. Insure most efficient burning of gas.

3. Insure safety by preventing loss of ignition and similar hazardous conditions.

The prime mover of most power boiler-control systems is a steam-pressure-measuring element connected to the plant steam header and designed to operate valves which supply sufficient gas to boiler furnaces to maintain steam pressure constant. The element may operate a gas valve directly; may actuate a regulator to control a gas valve; or may be designed as a master steam element.

Control of combustion in the second function of boiler controls, with objective of burning gas efficiently to assure the lowest cost of steam, greatest steam production from the available boiler plant, longest life of furnace refractories, saving in pipe-line capacity, and conservation of gas. Typical arrangements may be divided into three groups:

1. Air flow master loaded in step with gas flow.

2. Air flow actuated direct from gas flow.

3. Gas flow controlled direct from air flow.

Safety regulators, a very important part of any gas-fired-boiler control must prevent two serious conditions: low gas pressure and flame extinguishing, either of which might permit an explosion mixture of gas and air to accumulate. The common purpose of all safety regulators is to shut the gas off from all burners when the pressure of the gas drops to a predetermined minimum, most such devices having a lock which prevents valves from opening until manually reset, thus preventing gas from reaching the hot furnace until an operator is present to provide safe ignition.

Various designs in flame-failure control are likewise available, having as basic principle of operation actual determination of presence of the flame at each burner. One such design is electrically actuated by contact with the flame, with prompt closing of the valve in event the burner is extinguished.

Automatic control of natural-gas-fired power boilers provides constant steam pressure, and highest efficiency and safety of gas burning. Simple, complete and modified arrangements can be supplied for any size of plant and method of firing. Regulating equipment is available for various designs of system.

The Operating Characteristics Of Fluid Actuated Pumps

By C. M. Rader and R. G. Ralph
Kobe, Incorporated

The many advantages of hydraulic-power transmission as applied to well pumping are readily discernible by observation of field operations. Among the advantages are: flexibility, high operating efficiencies, positive utilization of energy at the point where work is to be done, ability to transport power efficiently over relatively long distances, large availability of motivating fluids, centralization of operating control, positive displacement of the bottom-hole pump, and positive reflection of subsurface well and pump conditions.

Hydraulic equipment consists of surface apparatus, including storage and circulatory equipment and pumps capable of furnishing pressures up to 5000 pounds per square inch; and the subsurface production unit, including the engine end assembly, which has a reciprocating plunger motivated by pressure of clean oil pumped into the macaroni tubing, and the production end assembly which provides double action pumping and lifts fluid from the bottom of the well.

Most of the extremely large wells utilize casing type systems, as this type installation accommodates larger sizes of subsurface production units.

Depth is not a limiting factor to fluid-actuated pumps and there are now available units capable of pumping from bottom the deepest wells drilled. The deepest pumping well now in operation has a fluid-driven subsurface unit seated at 9830 feet. Volume of fluid handled varies in wells from less than 1 barrel daily to over 4000, and theoretically there are few limitations to the maximum output.

Fatigue is eliminated to a large extent by the small amount of material in motion during operation of the system. A further advantage of the small amount of material in motion subject to fatigue is that the pumps may be constructed of the finest steels or alloys available without materially increasing costs.

Pumping Equipment for Oil Well Cementing

By Wm. D. Owsley
Halliburton Oil Well Cementing Company, Duncan, Oklahoma

A wide variety of services are performed by companies engaged in cementing casing in wells. In order to offer the complete service demanded, a company must also perform various remedial cementing and supply pumping machinery used to control wild wells, loosen stuck drill pipe, and do other work to which the well owner's pumps are not suited. Portability of equipment is necessary for such service to be provided economically, as often units must reach the well quickly in spite of inclement weather and bad roads, to protect the high investment represented by the well being drilled.

Ordinary cementing units are composed of two or more pumps, a cement mixer, water tank, manifolds, connections and auxiliary devices all mounted on large trucks. Of the features of a cementing unit, the pumps used are the heart of the assembly and their design presents an interesting study of unconventional fluid-handling machinery. Heavy-duty with flexibility of control are desirable qualities, and in addition, pumps must be suitable for mounting on the frame of a truck.

There are two basic types of cementing units: those provided with power-driven pumps, and the other with steam pumps. A commonly used pump is direct driven by either an automotive type gasoline or diesel engine. Where steam pumps are used, steam is obtained from boilers of the well drilling equipment. By compounding units of the pump assembly, pressure capacities are built up.

Recent requirements for specialized power pumps to handle high pressures led to development of a vertical power-driven cementing pump first placed into operation in 1938, and having a rating of 7000 PSI, although in actual field use they have reached 8000 PSI. The completed vertical pump ready for mounting on the cementing truck weighs 4350 pounds, and, under atmospheric discharge, handles 197 gallons per minute.

Conditions which led to development of the vertical pump later necessitated building a steam pump with discharge pressure of 8500 PSI, and having reached capacity in the field of 50 sacks of cement per minute. Overall length of this pump including a special discharge fitting is 40½ inches, and its completely fitted weight is only 2380 pounds. While designed for cementing operations on an intermittent service basis, it is believed that this pump could be adapted easily to continuous duty in any service for which its characteristics are suited.

WPB

[Continued from page 13]

ever, because of the physical burden of handling the PRP applications.

"The rapidly increasing materials requirements of the war program," it was explained, "make it impractical to continue the use of preference ratings which have been assigned under existing 'P' orders to whole industries, without any exact check of the amount of material which such ratings may be used to obtain. Through the Production Requirements Plan, the director of industry operations will continue to assign ratings to deliveries of materials for essential uses, but the rating assigned in each case may be used to obtain only a specified quantity of materials or products.

"Under the Production Requirements Plan, a company makes a single application for priority assistance covering all its estimated materials needs over a three-month period. The applicant must submit full information as to his inventories, the end use of his products, etc. Priority ratings are assigned on the basis of such applications to permit producers of products essential to the war effort or minimum civilian needs to obtain specified quantities of materials during a quarter. Interim applications may be filed when a company needs additional quantities of materials during the quarter because of increased war or other essential business."

For companies with a business of less than $100,000 a year a modification of the plan has been developed.

New Method for Filing Exceptions to M-68

A new procedure for the filing of applications for exceptions under Conservation Order M-68 was instituted by OPC last week, under which instead of sending all four copies of applications to the coordinator in Washington only three are to be sent, with the fourth transmitted to the OPC district office for the area in which the applicant is located.

This system, it was explained by Deputy Coordinator Davies, will eliminate the delay occasioned by the tranmission of one copy of each application to the district office from Washington, and will enable the district office and the Washington staff to analyze requests simultaneously, so that as soon as the district office's comment is received in Washington, applications can be given immediate consideration.

The procedure will apply to all three application forms for exceptions — for an entire pool or drilling program; an individual lease, property or well; and a cycling or repressuring plant.

Marketing Order M-68-c Amended Last Week

An amendment to Conservation Order M-68-c, permitting use of materials for certain types of replacement by marketers, was issued by the War Production Board March 23.

At the same time, OPC called attention of the industry to the fact that M-68 orders apply to the use of materials and not to their purchase or sale.

The explanation was issued by Deputy Coordinator Davies. "There seems to be some misunderstanding about this," he said. "A marketer may purchase and accept delivery of any materials he can get; M-68-c merely states in what manner he is permitted to use those materials."

Among the changes made in the order was the extension from March 15 to May 15 of the deadline for the completion of construction work on marketing facilities begun before January 14. The extension, it was explained, will permit the finishing of work that had been delayed by inclement weather.

☆ OPA ☆

All Pennsylvania Crudes Granted 25-Cent Hike

A flat increase of 25 cents per barrel for all grades of Pennsylvania-grade crudes, raising the range of prices from $2.30-$2.75 to $2.55-$3 per barrel, was granted by the Office of Price Administration March 25, to be effective immediately, with the promise of another 25-cent increase when production reaches an average of 85,000 barrels per day over a three-months' period.

The increase was granted, Acting Price Administrator John E. Hamm explained, because of the military demands for a substantial and rapid increase in the production of these oils.

To reach the production goal required to supply expected war and other demands, it is estimated that the Pennsylvania area industry will have to expend approximately $15,000,000 annually for three years for repressuring, reconditioning and drilling of new wells.

At the time the original price schedule (No. 22) was issued, OPA said, production of Pennsylvania-grade crude approximated 75,000 barrels per day, or about 2 percent of the total daily national output. Later, the average monthly production increased slightly but crude runs to stills reached a total of more than 80,000 barrels a day, with consequent drainage of stocks which now are approaching a working minimum.

Under the schedule the maximum prices are increased as follows: Pennsylvania Bradford, $2.75 to $3 per barrel; Southwest Pennsylvania, $2.40 to $2.65; Eureka, $2.34 to $2.59; Southeastern Ohio, $2.30 to $2.55; Oil City-Titusville, Group A, $2.68 to $2.93; Group B, $2.67 to $2.92; Group C, $2.66 to $2.91; Group D, $2.65 to $2.90; Group E, $2.63 to $2.88.

The OPA order revokes Maximum Price Schedule No. 22 and brings Pennsylvania crude under Price Schedule No. 88, covering petroleum and petroleum products.

Eastern Refined Products Get Price Increase

A few hours after it lifted Pennsylvania crude maximums, OPA authorized companies serving the Eastern seaboard to increase their gasoline prices by one half cent per gallon, light fuel oils by four-tenths cent per gallon and residual fuel oils by 20 cents per barrel.

The purpose of the increase was to enable the companies to pass on to consumers the higher transportation costs involved in the use of railroad tank cars instead of tankers. It was in response to urgent recommendations by the petroleum coordinator and was based on a showing of the additional cost, which the companies estimated will run to more than $100,000,000 a year.

OPA admitted that the coordinator had warned that unless the companies were permitted to re-

cover the extra costs, the program for using railroad and other substitute transportation facilities would not be effective.

It was emphasized that the order does not set a permanent ceiling for the commodities involved but that OPA "considers the permission to increase prices as an interim action, subject to revision after study of conditions surrounding transportation of petroleum and petroleum products to the vital eastern territory in the future."

"Under the circumstances, it is necessary to act swiftly to assure adequate supplies of petroleum and petroleum products for war and civilian needs on the East Coast," the order declared.

"The important consideration at this time is the fact that this office accepts the basic principle that, because of indispensable requirements for civilian and war needs for petroleum products on the East Coast, the companies operating on the Eastern Seaboard should be reimbursed for the extra transportation expenses incurred in the movement of petroleum and petroleum products to the eastern seaboard over similar expenses incurred under normal methods of operation in use prior to June 30, 1941."

Companies given permission to increase their prices are required within 30 days to make reports to OPA, including a certified audit of the additional transportation expense incurred up to March 1, with supplementary audits to be filed monthly thereafter. OPA will eventually issue a more permanent price ceiling on the basis of its study of these reports.

Panhandle Crude Price Equalization Refused

Holding that equalization of maximum prices for Texas Panhandle crude oil with those established for Oklahoma and Kansas crudes is not justified, OPA last week denied an application for removal of the 10-cent-per-barrel differential in favor of the latter, filed by the Panhandle Producers and Royalty Owners' Association of Amarillo, and J. P. Coleman of Wichita Falls.

However, the applicants were told by Acting Administrator John E. Hamm, the action of OPA does not affect their rights to file protests or petitions under the Emergency Price Control Act.

"There is strong economic justification for the existence of a price differential between the two areas because of the less favorable geographic position of the Panhandle and because Panhandle crude oil has certain undesirable qualities which lead to higher refining costs," Hamm held in denying the petition.

"While it would be extremely difficult to determine whether the proper differential is the existing differential or one of a cent higher or lower, it is true that the present differential of 10 cents is the lowest that has obtained in a long period. Panhandle prices have increased more than those in any of the surrounding areas in recent years. Any further increase at a time when inflation threatens our effective prosecution of the war seems unjustified on the basis of the information submitted."

Formal Application for Price Changes Required

Requests for permission to increase service-station gasoline prices in District 1 and Oregon and Washington, frozen by Price Administration order March 18, "cannot be considered" unless filed in accordance with the provisions of the Emergency Price Control Act, it was announced March 24 by Acting Price Administrator John E. Hamm.

Hamm said no informal requests will be accepted. It was not disclosed whether any such requests had been received at OPA, however, or whether the announcement was for the benefit of any station operators who might desire to file a protest against the maintainance of the March 13 prices ordered for a period of 60 days beginning March 23.

Maximum Rates Set for Oil Transportation

Maximum freight rates and surcharges for transportation of petroleum products in the Caribbean and South American trades were approved this week by the War Shipping Administration.

The schedule is based on the time charter scale approved by the Maritime Commission January 5, last, and covers movements from United States Gulf and Caribbean ports to those of Brazil, the River Plate and Chile, effective as of January 20, 1942.

To these basic rates WSA has approved application of a 20-percent surcharge, effective on loadings beginning March 1, to cover increased wartime operating costs.

The administration also authorized a 25-percent surcharge on petroleum products moving to and from Gulf ports from Port Arthur east to Tampa, Cuba, Panama, Puerto Rico, Virgin Islands and Aruba. This action followed a recent surcharge of 37½ percent authorized on cargoes between Gulf and Caribbean ports and North Atlantic ports from Montreal to Miami.

Post-War Oil Needs Told Congress

"The war period is certain to leave an indelible imprint on the longer-term needs for petroleum," Congress was told March 28 by the National Resources Planning Board in a report on post-war planning for natural resources and public works.

Written only a week after the attack on Pearl Harbor, the board was unable to deal with the conditions which have since arisen in the oil and other major industries as a result of the war program, but even then foresaw that "ability to supply combat and related (oil) consumption might well be the controlling factor in the world-wide struggle."

"The longer-term needs for petroleum and its products will depend on:

(1) Changes in consumption habits, including changes brought about by the emergency period;

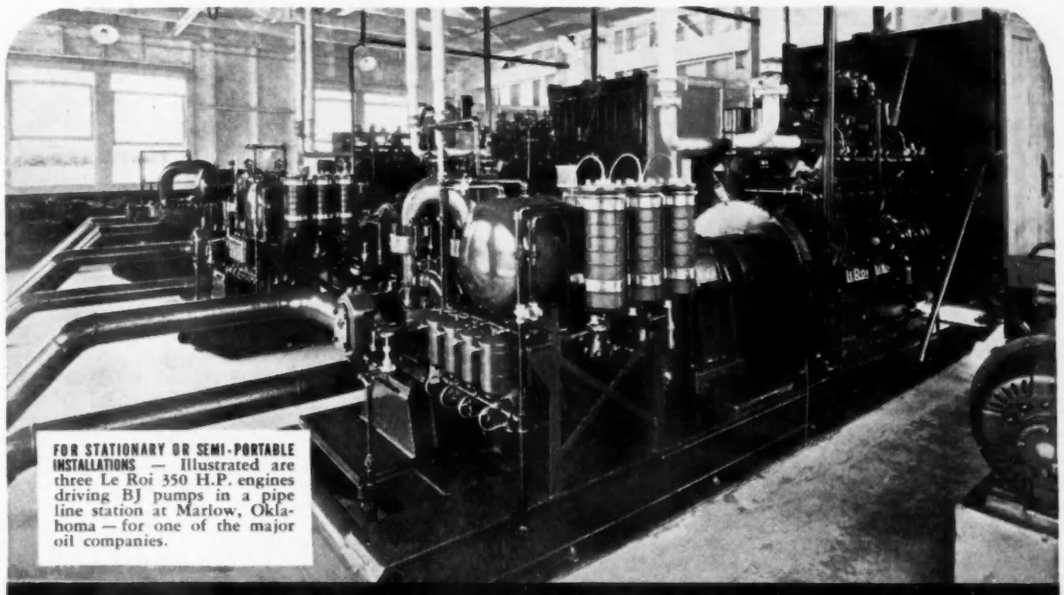
(2) The level of total production and consumption;

(3) The relative price levels of competing fuels;

(4) Technological developments affecting the volume and type of fuel consumed;

(5) Many other factors affecting transportation such as the patterns of industrial locations, highways and population," the report declared.

The prospects are for a continuing increase in over-all petroleum needs if the supplies continue to be available.



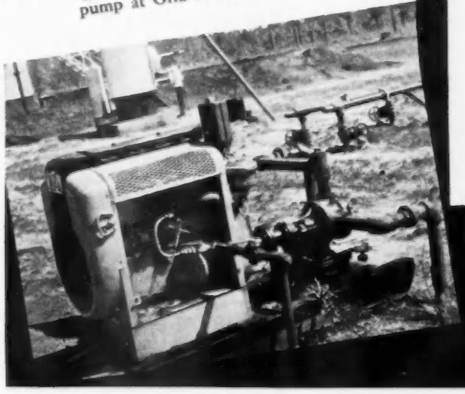
FOR STATIONARY OR SEMI-PORTABLE INSTALLATIONS — Illustrated are three Le Roi 350 H.P. engines driving BJ pumps in a pipe line station at Marlow, Oklahoma — for one of the major oil companies.

On dependable power for Pipe Line Pumps

you're "low with LEROI *" all the way — — —*

FOR GATHERING SERVICE — *(above)* A LeRoi D201 engine operating a reciprocating pump on the property of a major oil company at Cromwell, Oklahoma.

FOR PICK-UP AND TRANSFER SERVICE — *(below)* A LeRoi D71 air-cooled engine operating a rotary pump at Olla Field, La.



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Depletion Allowance Fight

[Continued from page 15]

militated against exploration, he told the committee, are the increasing costs of labor and material, increasing state and county taxes and increasing income taxes, also the effects of the transition from the bonanza period of oil production to the saner present period in which it is realized that the reserves discovered must be exploited to the maximum.

Against these forces, he said, the producer has had the important grants of the depletion allowance and the option of expensing intangible drilling costs. "These have been of material advantage," he commented.

Under questioning by members of the committee, Allen said OPC is doing its utmost to increase production in Montana and Wyoming to relieve the shortage in the northwest, where current supplies are sufficient only for two or three days.

The supplying of oil to bases established and to be established in Alaska, he admitted, is "very difficult," but because of its military importance not a subject to be discussed in open meeting.

Canadian production, he told Representative Knutson of Minnesota, is being maintained, but while Alberta is considered a potentially great oil area, development will come only when transportation facilities are provided.

Pennsylvania Joins Fight

Although approximately 1,000,000,000 barrels of oil have been withdrawn in Pennsylvania in the 83 years of the industry's history there, probably that much more still remains in the ground, and the immediate problem at the moment is to increase production, it was declared by J. E. Moorhead, executive manager of the Pennsylvania Grade Crude Oil Association.

"In the interest of the war effort and the anxiety of our producers to make their maximum contribution to its prosecution, we must protest against the elimination of or change in the present depletion provisions of the tax law," he said. "We must protest also against what is of equal or even greater importance to us—the proposed provision that will eliminate the right to expense intangible drilling costs."

Secondary-recovery methods now being used in Pennsylvania, he explained, make the lifting of oil expensive and possible only with the benefit of these provisions.

"The proposed revisions in the income-tax law strike directly at the only funds which are available to the producer for the maintenance of these essential drilling operations," Moorhead declared. "The practical effect of their enactment would be to wipe out the only source of capital by which the necessary output of oil can be maintained or increased."

Under the impetus of the concessions granted since 1918, production in Pennsylvania has increased from approximately 7,500,000 to 20,000,000 barrels and in New York from 600,000 to 4,000,000 barrels a year. Continuance of the depletion allowance and option, he said, will enable Pennsylvania to increase output by 10,000 barrels a day, to the capacity of refinery equipment now idle, and 5000 barrels of that increase can be accomplished within a year.

Banks which now finance wildcatters will not continue to do so if the depletion allowance is eliminated, it was declared in a brief filed by D. W. Forbes, vice president of the Republic National Bank of Dallas.

In the past nine years, the brief showed, the bank has made 4200 loans amounting to $92,886,000 to independent oil men and companies, and under the depletion and intangible drilling cost provisions those loans have been paid off steadily so that at the close of February only $18,455,000 was outstanding.

It was shown that of 240 loans now outstanding, 127 were for less than $25,000 and only 51 in excess of $100,000.

"It is our firm conviction that if these proposals are passed as recommended by the Treasury Department it will result in the financial breakdown of a substantial percentage of the type of independent operator which we have been discussing," the brief declared.

"In addition, the ability of the surviving operators to borrow money will be greatly impaired, with a resultant reduction in wildcatting and other drilling —and this at a time when the necessities of war make it more important than usual that the discovery and development of oil reserves be encouraged.

"Obviously, banks cannot lend money on the security of speculative drilling operations. It is characteristic of independent oil producers, however, that they do borrow to the limit on proven oil reserves to engage in the highly hazardous but extremely important drilling of wildcat wells, and it is through the operation of such policies that probably more than one half of the vast oil reserve of the state of Texas has been uncovered."

California Responsibilities

California has the "heavy responsibility of supplying fuel oil and oil products for the battle of the Pacific," it was pointed out in a brief filed jointly by the California Stripper Well Association, California Oil and Gas Association, Oil Producers Agency of California and the San Joaquin Valley Oil Producers Association.

"California oil is the only oil west of the Rocky Mountains available to the Pacific Fleets; there are even now insufficient tankers to carry oil from the Gulf Coast to Pacific Ocean terminals; there is no east-west pipe line; railroad tank cars are now being utilized to their fullest extent; there is steel neither for tankers, for tank cars, nor for pipe lines, nor is there time in which to build them.

"Necessary war regulations have already affected the productive ability of the California oil industry while the war demand for iso-butane, heavy oil and other petroleum products makes it obvious that if the depletion allowance is eliminated or reduced, the industry will be grievously crippled in its war effort.

"The full load of the demand for oil for the Pacific war is now being placed squarely upon the shoulders of the California oil industry. It is of more than vital importance that adequate oil production in California be maintained; it is a matter of actual military necessity for the safety of the Nation."

California cannot maintain production without constant drilling and exploratory effort, repair and rehabilitation of existing wells, and this can not be done without maintenance of the depletion allowance, it was asserted.

"As it is," the committee was told, "radical changes in the economy of the oil industry are inevitable as a part of the war. These changes stem from the change in demand caused by the war. Before December 7, gasoline was the industry's 'money' product; fuel oil and other oils were by-products. Since December 7, fuel oil has become the industry's fundamental product; commercial gasoline is the new by-product.

"Interwoven into the changes of operating procedure necessary to fit the changed demand will be many items of excessive cost. Refineries will have to be adjusted to a fuel-oil output; commercial gasoline may have to be stored in tanks, reservoirs, or even returned to the oil formations. The industry's war-caused operating costs, coupled with practical loss of its major item of income, will result in grave economic problems, which will not be solved overnight. These economic problems will be grave even though the percentage depletion allowance is retained at present rates."

Allowance Has Expanded Industry

Original adoption of the depletion allowance was based on a desire to expand the industry, and this has been accomplished, it was declared by George C. Gibbons, executive vice president, in a statement filed for the Texas Mid-Continent Oil and Gas Association.

"The Texas oil industry has been built largely under the Congressional policy of depletion allowance and the right to expense intangible drilling and development costs," Gibbons said. Since 1918, he pointed out, Texas reserves have increased from 500,000,000 to 11,478,790,000 barrels, the number of operators has increased from 1005 to 5600 and the production from 38,750,000 to 507,584,000 barrels.

Nearly 30,000 Texas wells produce less than 4 barrels a day, and 30 percent of them will be abandoned within 18 months after revocation of the allowances, he warned, endangering a 650,000,000-barrel reserve.

Heavy Fuel Continues Main Problem; Pennsylvania Crude Price Boosted

Former unfavorable trends were continued in the week ended March 21, latest statistics of the industry indicated. Refinery runs were increased a little for the country as a whole, but they were 54,000 barrels per day (1.5 percent) lower than in the corresponding week a year ago, in averaging 3,599,000 barrels daily, which represented 76.8 percent of rated capacity.

However, the runs were not stepped up in the districts where increases were especially needed, decreases having occurred on the East Coast, in the Appalachian region, the Middle West, and the upper Mid-Continent. Only the Texas-Louisiana Gulf Coast, the Rocky Mountains, and California showed increases. East Coast plants processed only 483,000 barrels of crude daily, 19,000 a day less than in the previous week, and were operating at 67.6 percent of capacity.

Gasoline production was curtailed in reflection of the reductions in crude runs to stills, having been 30,000 barrels a day smaller than in the previous week and 12,000 barrels per day less than in the corresponding week last year.

Stocks of finished and unfinished gasoline were drawn down a million barrels from the all-time peak of 107,229,000 barrels reported March 14, but they were 7,408,000 barrels (7.5 percent) above a year earlier, when the total was 98,723,000 barrels. However, the week's reduction was accounted for largely by the East Coast district, where more is needed. That area thereupon had 16,973,000 barrels left on hand. There were withdrawals also in the Appalachian, Middle Western, and upper Mid-Continent districts. The Louisiana Gulf Coast cut stocks, but Coastal Texas plants accumulated 323,000 barrels more in bulging storage. California had a 133,000-barrel build-up.

The light fuel oil situation was the best part of the week's statistics. Stocks were reduced 541,000 barrels, a normal amount, and on the East Coast there was a 235,000-barrel increase. The 32,290,000 barrels left on hand in the United States exceeded by a million barrels (3 percent) the quantity held a year previously.

More Pipe Lines to East?

Heavy fuel oil continued the No. 1 problem. It was necessary to take 1½ million barrels from storage, including 195,000 from the dwindling stocks on the East Coast and 109,000 from tanks in the Middle West. Close to a half million barrels came from storage on the Gulf Coast and about the same amount from stocks in California. The nation now has only 84,025,000 barrels of residual fuel oil in storage, against 94,141,000 a year ago.

Further efforts toward increasing pipe line movement of oils eastward were under way, with deliveries of gasoline to suppliers restricted on the East Coast, and with early rationing contemplated, while movement into the district by tank car apparently was near the highest level possible. Construction of more pipe line capacity across the country was expected to be recommended shortly by the transportation committees that have been set up within the industry under OPC. New pipe probably will be sought, and if it cannot be obtained, the dismantling of some existing lines may be resorted to in providing new lines to the East.

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	[1,6]OPC Allocation in March	PRODUCTION IN WEEK ENDED Mar. 21	Mar. 28
Arkansas	[2]71,500	70,550	76,550
California	[3]627,000	628,800	585,300
Long Beach		36,400	33,600
Midway-Sunset		52,700	50,100
Kettleman Hills		23,700	26,300
Wilmington		89,800	94,000
Rest of State		426,200	381,300
Colorado	6,400	6,000	5,950
Illinois	362,500	321,750	326,900
Salem		49,600	49,100
Louden		52,400	53,200
Other New Pools		207,550	212,450
Old Pools		12,200	12,150
Indiana	18,000	17,200	20,200
Kansas	[2]245,800	228,750	238,900
Kentucky	12,000	12,400	12,350
Louisiana	[4]314,700	333,200	334,400
North		80,700	80,350
South		252,500	254,050
Michigan	[2]49,500	50,950	46,200
Mississippi	53,100	90,700	93,850
Missouri		130	130
Montana	21,000	21,450	21,400
Nebraska	5,100	4,050	4,150
New Mexico	[2]100,200	93,300	93,500
New York	14,500	13,100	13,100
Ohio	9,200	9,800	9,700
Oklahoma	[2]405,300	390,350	387,350
Oklahoma City		74,850	74,250
Seminole Area		101,950	101,150
Rest of State		213,550	211,950
Pennsylvania	48,200	51,800	52,800
Tennessee		30	30
Texas	[5]1,338,600	1,214,400	1,411,900
Upper Gulf Coast		248,900	285,150
East Texas Field		292,800	368,550
Rest of Eastern Texas		84,400	89,900
Lower Gulf Coast		96,850	110,050
Southwest Texas		59,050	66,300
South Central Texas		18,300	20,650
West Texas		181,700	232,550
North Texas		148,500	149,200
Panhandle		83,900	89,550
Utah		15	15
West Virginia	9,600	10,800	10,600
Wyoming	80,500	92,750	90,400
Total United States	3,792,700	3,662,275	3,835,675

[1] Production rates recommended for states by Office of Petroleum Coordinator, on Basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month.

[2] OPC allocation adopted by state conservation authorities as allowable production.

[3] OPC allocation also represents allowable production, the state quota being distributed among fields by Conservation Committee of California Oil Producers, acting under OPC supervision.

[4] Louisiana Department of Conservation set allowable at 346,031 barrels daily for March.

[5] Calculated daily average of actual production as of March 7 was 1,292,239 barrels, allowing for underproduction of 3.9 percent below net allowable, which was figured at 1,344,963 barrels daily. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated for March 7. Under the new order, most Texas fields were ordered shut down March 1, 7, 8, 11, 12, 14, 15, 18, 21, 22, 25, 30 and 31.

[6] Quotas shown here for Texas, Mississippi, Louisiana and New Mexico, are as revised by OPC; being about 10 percent under originally set allocations

Where Is Pipe?

Speculation has arisen as to how much pipe could be dug up in dormant or relatively little used systems, and various lines have been mentioned. It is pointed out that the United States Department of Interior still has an inactive natural gas line, said to be 8-inch, from Petrolia field, Clay County, Texas, to Fort Worth, which was built to supply uncontaminated helium-bearing gas to the Fort Worth helium plant, now near Amarillo. Among crude lines that probably would be considered for digging up are the following: Sinclair Refining Company's 8-inch from the Texas Panhandle to Ringgold, Oklahoma, which currently handles only a comparatively small volume of oil; Gulf and Magnolia's joint 8-inch line from the Texas Panhandle to the Ranger district, which has been handling comparatively little oil in recent years; Atlas Oil & Refining Company's idle crude line from the Longview section of the East Texas field to Shreveport, Louisiana; and units in the multiple system of Stanolind from Mexia to Houston.

Higher Prices Authorized

Price news of the past week was favorable, as the Office of Price Administration authorized a general increase of 25 cents a barrel in postings for Pennsylvania grade crude and also approved higher price ceilings on gasoline and fuel oils in the East Coast district.

The higher crude prices in the East are intended to stimulate production of Pennsylvania grade crude to meet military needs, and another increase of the same amount will be permitted when production averages 85,000 barrels daily for a three-months period. New prices authorized are: $3 for the Bradford district, $2.65 for Southwest Pennsylvania oil, $2.59 for Eureka crude, and $2.55 for Southeastern Ohio oil.

Increases in prices of gasoline and fuel oil in the East Coast district were authorized in compensation for the higher costs of transportation involved in current heavy movement into the region by rail. The increases permitted are as follows: ½ cent a gallon on gasoline, including service station prices, except in Georgia and Florida, where advances previously were made; 4/10 cent a gallon on kerosene, tractor fuel, range oil, Nos. 1, 2, 3, and 4 fuel oils, gas oils, and distillate fuel oils; and 20 cents a barrel residual fuel oils, including No. 5 and No. 6 fuel oil, Bunker C, navy grade, and residual diesel fuel oil. The increases apply to sales in 17 eastern and southern states.

May Increase Michigan Production

Michigan oil production may be stepped up from its present average of

52,000 barrels daily to 65,000 to meet a 10,000 to 12,000 barrel demand of an Eastern refinery.

Wirt Franklin, head of District No. 2 of OPC, already has asked state officials to prepare its production and proration plan to fit the increase. Franklin said shifting of 10,000 barrels a day supply from the Tinsley, Mississippi, field to Michigan would cut the transportation tank car load more than 50 percent.

Movement East

Crude could be routed from Michigan via existing pipe lines to either Bay City, Michigan, or Toledo, Ohio, and from these points delivered by lake barges either to Buffalo or Albany, New York, or to Montreal, relieving completely or in part 50 tank cars now moving oil to a Standard of New Jersey refinery at Everett, Mass.

P. J. Hoffmaster, Michigan's state supervisor of wells, estimated that Michigan production could be stepped up "safely for 6 months to 1 year by increasing allowables in three fields from the present 125-barrel rate to between 125 and 175 barrels per day."

Franklin indicated that OPC looks to Michigan as a key factor in helping to solve the present Eastern seaboard crude shortage, which has developed from transportation difficulties.

Western Refiners Given Fuel Oil Assignment

Movement of 10,000 tank cars of fuel oil from District 2 to the Atlantic seaboard has been made an industry assignment by the Petroleum Coordinator.

The task was outlined before the annual meeting of the Western Petroleum Refiner's Association in St. Louis, March 25 by B. L. Majewski, chairman of the marketing committee of the district and Paul G. Blazer, committee member. Half of the total will be rolling by April 1 and the remainder by April 15.

Refiners will add as much as 20 percent of furnace oil to heavy fuel in order to use cars not equipped with coils for unloading. Curtailment of gasoline shipments out of this district to eastern seaboard for 30 days is contemplated.

Wright W. Gary, OPC director of refining, told the convention that refiners face adjustment in output in order to provide sufficient fuel oil and aviation gasoline, toluene and butadiene. Where equipment is necessary to adjust processing his office will help on priorities.

His department now has proposals under consideration to boost aviation gasoline output to 250,000 barrels daily. Some may not be accepted since 1000-barrel-daily capacity is now low economic limit.

Heads W. P. R. A.

C. L. HENDERSON

He recommended trading of partly finished products between plants as one means of providing critical materials and cutting down on motor gasoline. Also using part of cracking capacity on gasoline to make butadiene, toluene and benzol. In a few instances where plants are making these products in combination units the war products are cutting as much as 30 percent into motor gasoline.

Despite adjustments in plant methods he said Gulf Coast plants face reduction in throughput.

Fayette B. Dow, Washington counsel and Assistant Director of Defense Transportation, spoke off the record.

Officials elected are: C. L. Henderson, Vickers Petroleum Company, Wichita, president; R. W. McDowell, Mid-Continent Petroleum Corporation, Tulsa; C. W. Cahoon, Jr., Olney Oil & Refining Company, Wichita Falls; T. M. Martin, Lion Oil Refining Company, Eldorado, Arkansas; and H. E. Zoller, Derby Oil Company, Wichita, vice presidents.

Magnolia Moving East Texas Oil North

Diversion of East Texas crude oil from coastal refineries and tanker terminals to interior pipe lines for movement to the East Coast has been materially increased through Magnolia Pipe Line Company having started shipments of 20,000 bbls daily. The company has reversed the stream in its Oklahoma multiple system so as to permit north-bound shipments, and is routing this East Texas oil via Corsicana and Fort Worth to Panova, Okla., where the oil is mixed with other Mid-Continent grades from North Texas and Oklahoma for movement through the Sinclair Refining Co.'s system to Socony-Vacuum Oil Co.'s refineries in Middle West and East. East Texas oil is also delivered to Magnolia's refinery at Fort

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

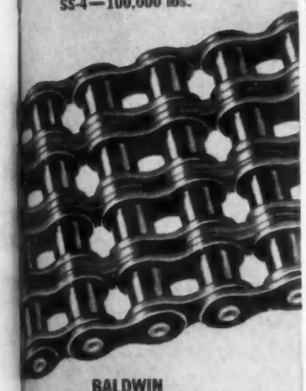
WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels))	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
February 18	3,324,300	[6]3,125,000	271,252,000	83,075,000	23,747,000	111,349,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,600,800	3,475,000	246,982,000	73,475,000	37,722,000	[2]116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	[2]39,562,000	114,786,000
1940:						
January 6	3,584,450	[6]3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	[6]102,344,000
March 16	[2]3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,558,000
April 6	3,745,000	3,455,000	251,897,000	101,690,000	[6]23,551,000	105,099,000
April 20	3,858,550	3,535,000	254,881,000	[2]102,817,000	24,779,000	103,323,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
September 14	3,647,400	3,580,000	262,475,000	83,300,000	46,648,000	[2]109,135,000
October 19	3,667,550	3,525,000	262,098,000	81,656,000	[2]49,051,000	108,141,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	[6]3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
1941:						
January 4	3,367,200	3,600,000	260,643,000	85,053,000	42,403,000	[2]102,448,000
January 11	[6]3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	[6]3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
March 29	3,746,550	3,625,000	[2]266,187,000	[2]99,727,000	29,949,000	96,152,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	[6]28,381,000	95,471,000
July 5	3,658,200	3,745,000	258,070,000	90,064,000	36,925,000	[6]92,635,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[4]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
November 15	4,086,850	4,010,000	[6]240,399,000	83,412,000	[2]54,983,000	95,993,000
1942:						
January 3	4,038,000	3,961,000	244,440,000	92,987,000	49,357,000	95,857,000
January 10	4,229,150	3,891,000	244,364,000	94,204,000	47,250,000	94,885,000
January 17	4,045,600	3,723,000	246,267,000	95,617,000	43,984,000	92,703,000
January 24	4,311,300	3,885,000	248,164,000	96,363,000	41,863,000	92,079,000
January 31	3,871,350	3,848,000	250,740,000	97,810,000	40,674,000	91,189,000
February 7	[4]4,336,900	3,853,000	252,366,000	100,224,000	40,038,000	90,859,000
February 28	4,015,650	3,675,000	259,373,000	105,635,000	34,547,000	88,285,000
March 7	3,934,350	3,530,000	260,064,000	106,668,000	33,386,000	87,531,000
March 14	3,515,300	3,588,000	262,063,000	[1]107,229,000	32,831,000	85,489,000
March 21, 1942	**3,691,700**	**3,599,000**	.....	**106,131,000**	**32,290,000**	**84,025,000**
March 21, 1941	3,681,050	3,653,000	[4]264,304,000	98,723,000	31,338,000	94,141,000
Amount Change:						
From Week Ago	+176,400	+11,000	[8]+1,999,000	—1,098,000	—541,000	—1,464,000
From Year Ago	+10,650	—54,000	—2,241,000	+7,408,000	+952,000	—10,116,000
Percent Change From Year Ago	+0.3	—1.5	—0.8	+7.5	+3.0	—10.7

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, March 15, 1941.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Latest weekly change.

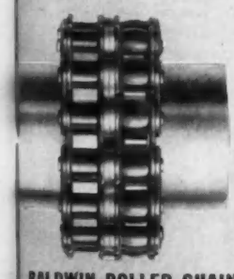
BALDWIN MASTER
1244-SS—185,000 lbs.

BALDWIN SUPER SERVICE
1030-SS— 66,000 lbs.
1240-SS—140,000 lbs.

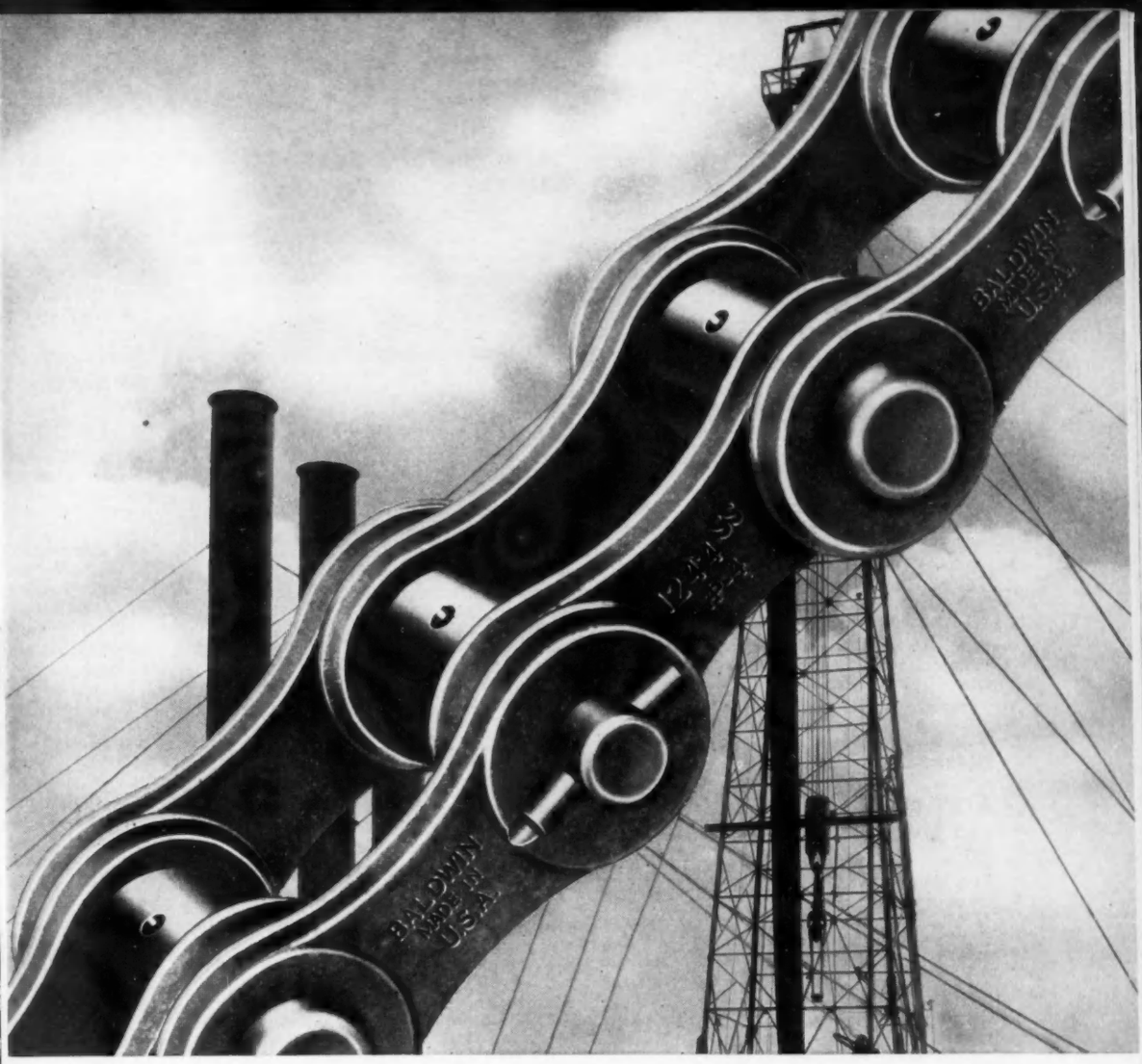
BALDWIN FULL FLEX
SS-3— 43,000 lbs.
SS-4—100,000 lbs.



BALDWIN MULTIPLE ROLLER CHAINS FOR DRIVES UP TO 500 H.P.



BALDWIN ROLLER CHAIN FLEXIBLE COUPLINGS



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You're looking at it!

● Tough to translate this picture into terms of dollars saved in drilling? Then take another look, mister . . . Notice how easily Baldwin chains flex over the sprockets, how smoothly they run—and how quietly.

The explanation for Baldwin chains' cost-cutting qualities is not hard to find . . . it lies in their design, material and construction.

And don't be content with just looking at Baldwin chains—use them! Experienced drillers, men who know the problems of tough going in deep fields, use Baldwin chains. We'll rest our case with them.

For Sale in All Oil Fields

BALDWIN-DUCKWORTH
Division of Chain Belt Company
341 Plainfield Street, Springfield, Mass.
Factories at Springfield and Worcester, Mass.

BALDWIN CHAINS TRANSMIT ALL THE POWER

Worth, with a portion of the throughput involving West Texas oil.

Low-gravity crudes produced and purchased in Oklahoma by Magnolia are being stored within the state during the period that its system is devoted to north-bound shipments. The company has idle storage in Oklahoma.

Tulsa Gathering Studying Pipe Lines for OPC

A committee of pipe-line operators held a three-day conference in Tulsa last week to analyze the Mid-Continent to the Eastern States transportation problems and to advise the coordinator.

W. R. Finney, Standard Oil Company of New Jersey, acted as chairman of the sub-committee of the transportation division of OPC considering the situation. Districts 1, 2 and 3 were represented and the problems of each were detailed. Experts on tank-car shipments took part in the analysis.

Major points discussed included; increasing the capacity of present pipe lines to the east, increase of rail facilities, possible relaying of vital arteries, reclamation to used materials to increase volumes carrying capacity and the use of barges.

Crude Oil Output Up Under Texas Influence

United States production of crude oil averaged 3,835,675 barrels daily in the week ended March 28. The output was 173,400 barrels per day greater than in the previous week and exceeded by 42,975 barrels the daily average recommended for March by the petroleum coordinator.

Largely responsible for the increase was a jump in Texas production to 1,411,900 barrels daily from 1,214,400 the previous week, as fields were shut down only 2 days, compared with 3 in the earlier period.

Illinois increased to 326,900 barrels daily from 321,750 the week before; Arkansas to 76,550 from 70,550; Louisiana to 334,400 from 333,200; Mississippi to 93,850 from 90,700; New Mexico to 93,500 from 93,300, and Kansas to 238,900 from 228,750.

California was off to 585,300 barrels daily from 628,800 the previous week; Michigan to 46,200 from 50,950; and Oklahoma to 387,350 from 390,350.

Two Recycling Plants Projected on Texas Coast

Two recycling plants have been projected on the Texas Gulf Coast with Shell Oil Company applying for application to construct such a plant and Superior Oil Company awarding contract to build a unit.

The Texas Railroad Commission has scheduled a hearing April 6 to consider Shell's application to build a plant in the Sheridan field, Colorado County. The field was discovered in May, 1940, producing from the Wilcox sand. Since that time, several new oil and gas horizons have been established.

Superior has let contract to the Fluor Corporation to build a plant in the Lake Creek field, Montgomery County. The field, discovered by Superior in February, 1941, produces from several Wilcox oil and gas sands, and more wells are due to be drilled to supply the plant. Capacity will be approximately 60,000,000 cubic feet daily.

New England Fuel Oil Situation Serious

A fuel oil shortage in New England so acute that it may shut down vital industrial plants within 10 days was described last week by spokesmen for the Massachusetts Committee on Public Safety in Boston. A report to Governor Saltonstall declared the situation would be critical by April 1. Operation of war production plants in the region was said to be endangered unless many consumers turned to coal and firewood to release more fuel oil to these plants.

Bureau Reports Drop In January Crude Output

Domestic crude production in January dropped 1000 barrels a day below the December level, averaging 4,137,500 barrels daily, but was 568,000 barrels a day greater than in January, 1941, it was reported March 26 by the Bureau of Mines.

Total production for the month was announced by the bureau as 128,262,000 barrels, against 128,293,000 barrels in December and 110,647,000 barrels in January of last year.

A gain in production in Texas in January of about 53,000 barrels daily nearly balanced decreases from December in other important states, namely, Oklahoma, Illinois and Kansas, the report said. California recorded a small decline, and Louisiana a slight gain.

With production virtually unchanged and with crude runs to stills showing the first large decline in many months, the increase in crude stocks was greatly accelerated, it was declared, about 7,000,000 barrels being added during the month. At the close of January, however, stocks were roughly 10,000,000 barrels below the same date a year ago.

"Daily average crude runs to stills in January reflected transportation difficulties and declined to 3,840,000 barrels, compared with 4,032,000 barrels in December," the bureau commented. "The principal changes in yields were a decline of about 1 percent for gasoline and an increase of about 0.5 percent in distillate.

"The total demand for motor fuel (domestic origin) in January was about 52,000,000 barrels, or 10 percent over a year ago. This is probably the last month until after the war that such a gain will occur, as tire conservation did not really get under way until February. Inventories of finished and unfinished gasoline again increased about 7,000,000 barrels, the total on January 31 of 101,213,000 barrels being roughly 11,000,000 barrels above last year's level.

"The permissible data for fuel oil for January indicate that the demand for heavy grades continued to run at least 10 percent over last year and distillate grades may have been up 20 percent."

The skeletonized statistical report compiled by the bureau showed natural gasoline production of 7,488,000 barrels for the month and benzol production of 208,000 barrels. Total production of crude, natural gasoline and benzol was 135,958,000 barrels, or 4,386,000 barrels daily.

Stocks at the close of the month included: Crude, refinable in the U. S., 253,531,000 barrels; heavy crude in California, 10,543,000 barrels; natural gasoline, 4,802,000 barrels; refined products, 284,415,000 barrels; total, 553,291,000 barrels.

Bureau of Labor Statistics figures placed the price index for oil and products in January at 59.5, compared with 59.8 in December and 50 in January, 1941. The crude-oil capacity represented in the report was 4,667,000 barrels, giving an operating ratio of 82 percent, compared with 88 percent in December and 83 percent in January of last year.

Natural Gas Products Show Big Gain in January

Production of natural gasoline, recycle condensate and liquefied petroleum gas at natural-gasoline and recycle plants in January average 10,145,000 gallons a day, compared with 8,240,000 gallons in December and 6,617,000 gallons in January, 1941, it was reported March 25 by the Bureau of Mines.

With the January report, the bureau began the compilation of statistics on all products.

Production during the month, it was shown, included 179,928,000 gallons of natural gasoline and 61,362,000 gallons of recycle products, against a total of 255,444,000 gallons in December; and 10,080,000 gallons of iso-butane, 63,126,000 gallons of liquefied petroleum gas and 5,376,000 gallons of liquefied refinery gas, for which no comparable figures are available.

Demand figures showed 224,742,000 gallons used at refineries against 187,824,000 gallons in December, and 14,910,000 gallons of natural gasoline and recycle condensate to jobbers and retail outlets, 35,364,000 gallons of liquefied petroleum gas to jobbers and retails outlets, and 22,890,000 gallons for exports and losses, against a total of 78,498,000 gallons.

Stocks at the first of the month were 180,516,000 gallons, and at the close of the month, 207,060,000 gallons, consisting of 178,794,000 gallons of natural gasoline, 9,408,000 gallons of recycle products, 13,482,000 gallons of liquefied petroleum gas and 5,376,000 gallons of liquefied refinery gas.

New Butadiene Plant Planned in California

Shell Chemical Company, San Francisco, announced last week it would start construction immediately on a $15,000,000 plant to manufacture butadiene. J. Oostermeyer, president of Shell Chemical Company did not say definitely where the plant would be built, other than it would be in the West.

Shell first began production of butadiene in 1941 at Houston. The California plant is scheduled to begin production in 1943.

Save-Tires Speed Not Hurting Efficiency

Orders have been issued by Standard Oil Company of California to the drivers of 2500 motor cars and trucks operated by that company not to drive faster than 40 miles an hour to conserve rubber and wherever possible to reduce speed to 30 miles an hour. The order was issued by the company March 7, and the management states the maximum speed of 40 miles an hour does not seem to have decreased the efficiency of operations. Tire engineers have found that a tire driven at 40 miles an hour will last 51 percent longer than one driven at the California speed limit of 55 miles an hour.

U. S. Field Operations

Indiana

Gibson County Well Flows State's First Oil From Osage

Kingwood Oil Co.'s Fithian 1, E½ SE SE 23-1n-10w, in the Hazleton area, Gibson County, was shut in for tankage after flowing 400 bbls in 11½ hours from Osage lime at 2402-09 ft, which was acidized with 5000 gallons. Hole was bottomed in the Devonian at 3450 ft, and was plugged back to Osage for the first commercial well in that horizon in Indiana.

Warrick County: Showing for a pool-opener northwest of Gentryville field, Forrest and associates' Sutton 1, SW SE SW 35-4s-6w, was bottomed at 1172 ft with McClosky saturation topped at 1165 ft. Most wells in the Gentryville area are from the Jett.

Posey County: Carter Oil Co.'s Baker 1, C SW NW 9-7s-14w, McClosky discovery well west of Mt. Vernon, pumping on beam, initialed 260 bbls oil in 24 hours after 3000 gallons acid. Hole is bottomed at 2963 ft.

COMPLETIONS

Daviess County—L. L. Benoist's Brewer Hrs. 1, sw sw se sw 33-3n-5w, abnd 603 ft.

Posey County—Inokla Oil Co.'s Keck 6, ne sw nw nw 35-3s-14w, Cyp 2498-2514 ft, and 2559-65 ft, td 2578 ft, 35 bbls. Paul Rossi's Schultz 1, se nw ne 19-6s-12w, abnd 2352 ft.

Spencer County—Siegel & Hedges' Yaeger 1, nw c sw 5-7s-7w, abnd 1052 ft.

Vanderburg County—Sells Pet. Co.'s Welborn 1, 200 ft s of ne ne sw 32-6s-11w, abnd. T. W. Drake's Nurrenbern 1, se c ne nw 6-7s-11w, Mansfield 1146-62 ft, td 1162 ft, 35 bbls.

WILDCAT STARTS

Posey County—Carter's Kiltz 1, c ne nw 8-6s-13w, dr.

Spencer County—Robert Lawton's Parker 1, ne se ne nw, dr.

Results on Industry's Prospecting Fronts

California: Moving in heavy equipment on projected test in Rincon field to go to 16,000 feet.

Illinois: New pool in White County; several wildcats showing.

Indiana: State's first oil from Osage in Gibson County well. McClosky indicate productive near Gentryville where production has been from Jett.

North Louisiana: Two 10,000-foot holes proposed for North Lisbon.

South Louisiana: Oil production established in Bay DeChene gas area; Tepetate gets major extension.

Michigan: Four offsets planned for Lake County discovery. Flow of discovery off because of cavings in uncased hole.

Oklahoma: Pottawatomie County wildcat produces from Simpson; fields extended.

East Texas: Hunt County wildcat projected to 8000 ft. Smith County Woodbine wildcat is failure.

North Texas: Wildcats predominate new operations; several in Montague County show favorably.

West Texas: Pecos County wildcat has shallow oil show; progress made on deep projects.

Southwest Texas: Largest volume of wildcat work reported in several months. DeWitt, Goliad and Hidalgo promise new fields; San Patricio has mile extension to production; Nueces County area has new sand.

Illinois

New White County Pool From McClosky

New White County pool; two Wayne County wildcats near completion as producers; pipe set at Jefferson County wildcat; Jasper outpost to test; Richland wildcat testing.

White County: Sun's Hertlein 1, C S½ SE SW 13-4s-9e, 5 miles west and 1 mile north of Crossville, swabbed 40 bbls of fluid, mostly oil, in 12 hours from McClosky lime at 3259-64 ft, total depth 3264 ft, to open new field.

Wayne County: First National Petroleum Trust's Ellis 1, C SW NE 18-1s-5e, 8 miles from other production, pumped on beam 105 bbls oil and 27 bbls water in 15 hours from Aux Vases at 2910-28 ft. On swab tests the well made 37 bbls an hour.

New Penn Development Co.'s Harris 1, C W½ NW NE 28-2s-9e, 1½ miles east of Golden Gate field, swabbed and flowed 145 bbls in 8 hours from Lower O'Hara and Rosiclare, total depth 3180 ft.

Jefferson County: Deaton-Bears' Howard 1, NE NE NW 5-1s-3e, east of the Dix field, setting casing to test between 5 and 7 ft of saturation in Rosiclare.

COMPLETIONS

Clark County—Wayworth Oil Co.'s McFarland 1, se c sw 19-10n-13w, Carper SS 1325-1568 ft, td 1568 ft, 5 bbls.

Clark County: Wildcat—Myers' Fudge 1, c e½ ne n e 20-12n-14w, abnd 200 ft.

Clay County: Wildcat—Gulf's Dillman 1, se nw sw 25-4n-7e, Tar Spgs 2333-2343½ ft, td 2342½ ft, 6 bbls.

Coles County: Wildcat—C. E. Green's Link 1, nw ne ne 9-12n-14w, abnd 1725 ft.

Crawford County—Roy R. Powers' Hart 1, 25 ft s of c n½ sw nw 20-8n-13w, td 1080 ft, junked.

Crawford County: Wildcat—William Krohn's

Summary of Drilling Operations in the United States, Week Ended March 28, 1942

	TOTAL WELLS COMPLETED							WILDCAT COMPLETIONS‡					
	Completions	Oil Wells	Gas Wells	Failures	†Miscellaneous	Total 1941	Total this Date 1942	Total this Week	Oil Wells	Gas Wells	Failures	Distillate Wells	Total 1942
Alabama	....	....	....	....	....	2	....	....	....	....	....	....	2
Arkansas	4	4	....	....	....	37	34	....	....	....	....	....	3
California	15	4	....	7	4	225	266	....	....	....	....	....	6
Colorado	....	....	....	....	....	3	3	....	....	....	....	....	....
Georgia	....	....	....	....	....	1	....	....	....	....	....	....	1
Illinois	17	8	....	7	2	597	743	8	3	....	5	....	109
Indiana	6	2	....	4	....	99	113	....	....	....	....	....	2
Kansas	15	7	1	6	1	408	456	5	1	1	3	....	89
Kentucky	2	1	....	1	....	42	60	....	....	....	....	....	....
Louisiana	10	6	....	3	1	279	324	2	....	....	2	....	44
Michigan	4	3	....	1	....	172	190	2	1	....	1	....	40
Mississippi	2	....	....	2	....	43	38	1	....	....	1	....	11
Missouri	....	....	....	....	....	7	15	....	....	....	....	....	....
Montana	....	....	....	....	....	36	48	....	....	....	....	....	....
Nebraska	....	....	....	....	....	9	22	....	....	....	....	....	2
New Mexico	7	6	....	1	....	105	84	....	....	....	....	....	8
New York	22	12	....	....	10	322	158	....	....	....	....	....	....
Ohio	12	2	7	2	1	325	356	....	....	....	....	....	....
Oklahoma	15	5	3	6	1	446	451	3	....	1	2	....	66
Pennsylvania	61	55	3	1	2	886	807	....	....	....	....	....	....
Tennessee	....	....	....	....	....	2	5	....	....	....	....	....	....
Texas	111	76	3	29	3	1,914	2,137	15	....	....	14	1	277
West Virginia	10	2	6	1	1	190	171	....	....	....	....	....	....
Wyoming	....	....	....	....	....	21	24	....	....	....	....	....	1
Total this week	313	193	23	71	26	6,171	6,505	36	5	2	28	1	661
Total last week	337	197	32	76	32	5,858	6,051	36	2	....	34	....	622
Total this year	6,171	3,628	503	1,410	630	....	....	661	79	9	572	1	....

† Includes old wells deepened, water intake, gas input, and salt water disposal wells.
‡ OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.

Wiman 1, c n½ ne se 19-8n-13w, Cypress 1164-1200 ft, pb 1243 ft, td 2754 ft, 55 bbls.

Edwards County—Central Pipe Line Co.'s Bierhaus 1, c n½ se se 31-2n-14w, McClosky 3114-3120 ft, td 3120 ft, 1320 bbls.

Hamilton County—Shell's Anderson 1, ne ne nw 13-6s-5e, pb 3220 ft, A.V. 3118-53 ft, L. O'Hara 3205-17 ft, td 3380 ft, 262 bbls. Texas Co.'s Johnson 1, nw ne ne 14-6s-6e, A.V. 3085-3100 ft, td 3124 ft, 147 bbls.

Hamilton County: Wildcat—Cameron Bros.' Donley 1, c n½ ne nw 15-7s-7e, abnd 3278 ft.

Johnson County: Wildcat—H. T. McGee et al's Taylor 1, 60 ft w of c s½ se ne 34-13s-4e, abnd 705 ft.

Richland County—Central Pipe Line Co.'s McVaigh 1, c w½ nw ne 28-2n-14w, abnd 3154 ft.

White County—Skelly's Bryant 2, se ne sw 7-4s-10e, McClosky 3218-3227 ft, td 3228 ft, 109 bbls.

White County: Wildcat—Carter's Marlin 1, c sw nw 35-6s-9e, Bethel 2794-2800 ft, td 3099 ft, pb 2800 ft, 72 bbls.

Williamson County: Wildcat—Turberville et al's Spiller 1, se se ne 7-9s-3e, abnd 2642 ft.

OLD WELLS DEEPENED

White County—Tide Water's Dennis 3, se sw ne 33-4s-14w, otd 2594 ft, Walts 2140-60 ft, Cypress 2583-2603 ft, td 2603 ft, 135 bbls; Dennis 8, nw sw ne 33-4s-14w, otd 2733 ft, Weller 2575-2605 ft, Bethel 2710-2736 ft, td 2736 ft, 102 bbls.

WILDCAT STARTS

Clay County—Gulf's Levitt 1, ne se sw 21-4n-8e, lcn.

Clinton County—Jack Darnell's Gordon 1, ne se 6-3n-2w, lcn.

Cole County—E. C. Baker et al's Moore 1, c se sw ne 34-14n-7e, lcn.

Edwards County—Zephyr Drlg. Co.'s Shelby 1, e½ nw sw 27-1n-10e, lcn.

Effingham County—C. L. Ervin et al's Storms 1, se sw sw 21-6n-6e, lcn.

Marion County—Big Chief Drlg. Co.'s Boles 1, c w½ sw nw 15-1n-2e, dr. Shaeffer & Stahl's Feller 1, c sw ne 24-4n-4e, lcn.

Washington County—Magnolia's Piglowski 1, se nw 13-3s-3w, lcn.

Wayne County—Mid-Continent's McLain 1, e½ ne sw 10-1s-6e, lcn.

Williamson County—Shell's Madison A1, nw se nw 10-8s-3e, lcn.

KENTUCKY

COMPLETIONS

Breckenridge County—Farrelly's Owen 1, 3-N-36, abnd 240 ft.

Ohio County—Ellis Massey's Moseley 7, 24-N-31, Tar Springs 822-856 ft, td 859 ft, 10 bbls.

Kansas

Rooks Discovery Given 65 Barrels Daily Rating

Baum pool officially opened for Rooks County; Smyers pool extended by good producer, another extension looming; Peace Creek extension kills heavy gas flow to retest lime section.

Rooks County: Palmer Oil Co.'s Baum 1, C SW NE 10-10s-16w, given state potential of 65 bbls oil daily from Lansing-Kansas City lime at 3218 ft to open new producing area.

Rice County: Nelson Drilling Co.'s Anderson 1, NW SE SW of 25-19s-6w, extends Smyers pool ¾-mi north, well good for daily potential of 420 bbls oil from Mississippi lime topped at 3336 ft; Continental's John 1, C SE SW 36-19s-6w, potential ½-mi south extension of the field, was at 3266 ft in chat.

COMPLETIONS

Barber County: Wildcat—Champlin's Hildebrand 1, c e½ ne nw 26-32s-15w, Topeka 3280 ft, Lansing 4160 ft, Miss 4735 ft, Viola 4931 ft, Simpson 5041 ft, Arbuckle 5185 ft, 10,000 gals acid, 14,000,000 gas.

Cowley County: Frog Hollow—Leader-Zephyr's Scott 2, ne nw ne 20-32s-5e, Bartlesville 3027 ft, Pay 3030-3034 ft, td 3034 ft, shot 20 qts, 50 bbls.

Elk County: Youngmeyer—L. C. Collins and Selby's Porter Ranch 1, se sw sw 24-28s-8e, Arbuckle 2926 ft, td 2934 ft, 500 gals acid, 50 bbls 30-gr.

Greenwood County: Wildcat—C. P. Welch's Alspaugh 1-A, sw sw nw 16-28s-12e, K. C. 900 ft, abnd 1066 ft.

Kearny County: Kearny-Patterson—Stanolind's Sam Nimblock 1, c e½ ne ne 26-22s-38w, Miss Lime 4852 ft, dry 4945 ft.

Marion County: Semi-Wildcat—Western Pipe & Supply's Remple 1, se ne nw sw 5-21s-4e, Miss Chat 2350 ft, dry 2525 ft.

Norton County: Hewitt—Helmerich & Payne et al's Hewitt 3, ne ne 11-4s-12w, Lansing 3428 ft, abnd 3436 ft.

Pawnee County: Wildcat—Stanolind's Smith 1, c n½ se se 16-23s-16w, Anhy 1017 ft, Lansing 3621 ft, Congl 3989 ft, Simp 4025 ft, Arb 4066 ft, td 4121 ft, 92 bbls oil, 30 bbls water, gr 35.5.

Phillips County: Wildcat—Carter's Munyon 1, c sw sw 5-3s-16w, Anhy 1522 ft, Permian dolo 2135 ft, Wreford 2457 ft, Shawnee 2795 ft, Topeka 2962 ft, Congl 3697 ft, Viola 3725 ft, Simpson 3851 ft, Arb 3892 ft, abnd 3926 ft.

Rice County: Haferman—McPherson Drlg.'s Patton D 1, sw nw se 9-19s-9w, Arb 3250 ft, td 3252 ft, 500 gals acid, potential 2636 bbls.

Rice County: Chase—Skelly's Link 1, c e½ sw se 19-19s-9w, Arb 3279 ft, abnd 3290 ft.

Rice County: Raymond—Vickers' Bayer A3, c n½ ne nw 20-20s-10w, Arb 3308 ft, td 3314 ft, 2000 gals acid, 19 bbls.

Rooks County: Westhusin—Consumers Co-op.'s McClay 2, c n½ se sw 12-9s-17w, Lansing 3151 ft, Pay 3209-3216 ft, pay 3224-3226 ft, pay 3340-50 ft, td 3350 ft, perf csg 3000 gals acid, pump 267 bbls.

Woodson County: Winterscheid—Guy Harper's Figge 11A, sw c ne 28-23s-14e, Miss 1651 ft, td 1690 ft, pb 1661 ft, 1000 gals acid, pump 5 bbls oil, 2 bbls water.

OLD WELL DEEPENED

Barber County: Lake City—Pryor & Lockhart's Gant A1, c se 7-31s-13w, otd 4438 ft, Misener 4434 ft, Viola 4435 ft, td 4656 ft, pb 4508 ft, 2,500,000 gas.

WILDCAT STARTS

Ellsworth County—I. W. Murfin et al's Appel 1, c n½ ne ne 9-18s-10w, mim.

Norton County—Rine Drlg.'s Wallark 1, c ne nw 22-2s-23w, lcn.

Pratt County—Shell's Green 1, se ne sw 6-29s-12w, rur.

Reno County—N. Appleman & Frank Hollow's Fair 1, se sw sw 16-22s-9w, lcn.

Rooks County—Claude Wentworth's Yeagy 1, c n½ nw nw 16-9s-17w, dr. Carter's Oliva 1, c nw nw 9-7s-17w, lcn. Churchill's Griffin 1, c ne ne 25-8s-16w, dr.

Saline County—Stelbar's Mortimer 1, c se se 4-16s-1w, rr.

Trego County—Darby's Haneke 1, se nw se 24-11s-21w, brr.

Oklahoma

New Pottawatomie Pool Makes Oil from Simpson

New pool for Pottawatomie County; west side of Apache pool proven by second largest producer; good well added Greater Hotulke area; Hickory Grove area extended.

Pottawatomie County: C. W. Sharp's Wells 1, NE SE SE 1-9n-2e, opens new pool, plugged back to Simpson dolomite from dry Wilcox sand, perforated 32 shots 5630-5598 ft, well showed 10,000,000 gas and 1 bbl oil per hr; running tubing to acidize. R. Olsen Oil Co.'s Meazel 1, C NW SW 24-9n-4e, extends Greater Hotulke area west, well topped Hunton lime 4185 ft, drilled to 4220 ft, acidized with 3000 gals, flowed 15 bbls oil hr through tubing choke on preliminary test.

Caddo County: Texas Co.'s Smith 1, NE NE NE 3-5n-12w, proves west side of Apache field, well topped Wilcox-Bromide zone at 3518 ft, drilled to 3771 ft, flowed 487 bbls oil first hr through 3-in lead line from open 7-in casing, gas estimated 6,250,000 daily, averaged 175 bbls hrly on 1-in choke, western extension is field's second largest producer.

Okfuskee County: Mid-Continent Petroleum Corp.'s Bear 2, SE NE SE 3-14n-7e, extends small new Hickory Grove field, early 1942 discovery, one location west, topped Bartlesville sand at 3131 ft, drilled to 3161 ft, flowed 17 bbls oil natural in first 24-hr test, operator continuing test.

COMPLETIONS

Creek County: So. Sapulpa—L. B. Jackson's Gregory 2, ne se nw 29-17n-11e, Bartlesville 1958 ft, td 1989 ft, 600,000 gas, 170 lbs rp.

Garfield County: Garber—Jack Chamberlain's Mullins 1, se c se 11-22n-4w, Garber Sand 2135 ft, abnd 2212 ft.

Kiowa County: Hobart—Shell's Watkins A 2, sw ne nw 20-7n-17w, Viola 960 ft, abnd td 1217 ft.

Marshall County: Isom Springs—E. J. Gill's Adams 3, nw ne se ne 6-8s-6e, sand 486-94 ft, td 494 ft, pump 25 bbls.

Muskogee County: Yahola—Link's Spott 11, ne c sw 28-15n-15e, Dutcher 1861-67 ft, td 1938 ft, pb 1908 ft, shot 100 qts, pump 25 bbls.

Okfuskee County: Wildcat—Olson & Springer's Hardin 1, sw nw se 35-13n-9e, Bart 2675 ft, Brown lime 2830 ft, Booch 2985 ft, Cromwell 3300 ft, 2nd Wilcox 4015 ft, abnd 4027 ft.

Okfuskee County: Unnamed—Champlin et al's Heatherage 3, ne se se 1-10n-8e, Booch 2985 ft, td 3006 ft, perf csg pump 15 bbls oil, 8 bbls water.

Okmulgee County: Schulter—W. B. Pine's Bates 3, ne se 30-12n-13e, Salt Sand 1140-1275 ft, abnd 1302 ft.

Okmulgee County: Mounds—Garr et al's Thompson 1, c sw nw se 24-16n-11e, sand 2241-51 ft, td 2253 ft, 3,000,000 gas.

Pontotoc County: Unnamed—Victory's McCurry 1, se se ne 16-4n-6e, abnd 925 ft.

Pottawatomie County: St. Louis—Commercial's Walgreen 2, se sw sw 4-7n-4e, Hunton 3719 ft, td 4016 ft, 3000 gals acid, pump 8½ bbls.

Seminole County: Sasakwa—R. Patterson's Cudja 1, se ne ne 12-6n-7e, Calvin 1126 ft, td 1212 ft, pb 1158 ft, pump 32 bbls oil and 16 bbls water.

Texas County: Wildcat—Panhandle Eastern Gas Co.'s Walker 1, c ne 25-3n-15e, pay 2644-2733 ft, td 2733 ft, 4,800,000 gas.

Tillman County: Wildcat—Anderson Prichard's Lock 1, cn½ nw nw 28-2s-15w, Canyon lime 2835 ft, odor 2854-59 ft, Arb. 4336 ft, abnd 4510 ft.

OLD WELL DEEPENED

Kay County: Wildcat—Fred Elders' Voheal 1, se se nw 34-27n-2w, otd 1055 ft, lime 1160-70 ft, abnd 1520 ft.

WILDCAT START

Kingfisher County—Union's Brown 1, se se nw, lcn.

NEW MEXICO

COMPLETIONS

Eddy County—Carper Drlg. Co.'s State Tellyer 1, c se ne 36-16s-30e, flow 60 bbls 2-in, natural, 3032-3114 ft. S. P. Yates et al's Robinson 1-B, sec nw 34-17s-29e, pump 3 bbls, shot 170 qts 2750-86 ft, td 3030 ft, pb to 2786 ft.

Lea County: Arrowhead—Gulf's Mattern 11-E, c nw ne 12-22s-36e, flow 948 bbls 39-gr natural 2-in, 3690-3765 ft.

Lea County: Cooper—Western Gas Co.'s Toby 1-A, c ne ne 13-24s-36e, flow 75 bbls 2-in natural, 3520-3607 ft.

Lea County: Maljamar—Barney Cockburn et al's Miller 1-B, c se se 34-17s-32e, elev 3907 ft, abnd 4200 ft. Martin Yates Jr. et al's State 1, c ne se 32-17s-32e, 100 bbls 2-in, shot 90 qts, 3470-90 ft.

Lea County: West Eunice—Wilson Oil Co.'s State 8, nw sw se 13-21s-34e, flow 5000 bbls open natural, 3752-60 ft.

West Texas

Pecos County Wildcat Has Shallow Oil Show

Pecos County has promising shallow oil strike. Official gauges given discoveries in Pecos and Ward counties. Lubbock County deep prospect disappointing.

Pecos County: Anderson-Prichard Oil Corp.'s Ogilvie 1, C NW NW T&ST L 30, Blk 140, 6 miles southwest Apco pool, making swabbing test through tubing after logging oil and gas show in Yates 1130-80 ft, total depth 1256 ft.

Ward County: Darby Petroleum Corp.'s University 1, 1⅓ miles west by south of the South Magnolia-Sealy pool and possibly on a parallel reef, averaged 39 bbls oil hourly the first 6 hours and 897 bbls on 24-hour official gauge through open tubing. Very little gas is present. Production is from oolitic lime, with cavernous porosity at 2825-47 ft, elevation 2614 ft, top reef lime 2785 ft.

Lubbock County: Stanolind's Stinnett 1, 6 miles southeast of the Lubbock

pool discovery pumper, logged promising oil and gas shows in Clear Fork intermittent saturation at 4685-4755 ft, but drill-stem test of this horizon yielded only 75 ft of rotary mud. Cores also indicated possibly intermittent water zones in the above section, and in coring to 4800 ft. Stinnett 1 entered San Andres at 2980 ft and Glorietta 3245 ft, elev 3136 ft, being 52 ft and 33 ft high, respectively, when correlated with discovery.

Discovery Gauged: Pure's T. P. Land Trust 1-A, western Pecos County Delaware strike, flowed 61.88 bbls 37.5-gr oil by heads through open tubing on official gauge after nitro shots in Delaware 5082-5274 ft, having plugged back from 6001 ft. Area has been designated as Chancellor pool. Production marketed by truck to Noelke Pipe Line Co. Additional exploratory work due to be undertaken.

Pecos County: Magnolia's State-Loar 1, mile southeast outpost for Abell field, coring hard dolomite 6196 ft, and largely dependent upon Ellenburger to forestall completion as failure, having proved low and dry in upper Simpson and drill-stem test in Waddell at 5854-74 ft yielded only 20 ft oil-cut mud. Humble's Gregg 1, ½ mile southwest of Ellenburger production in Apco pool, was coring detrital above Ordovician dolomite at 4650 ft, establishing sharp dip in the structure.

COMPLETIONS

Andrews County: Emma—Sinclair Prairie's Cowden 17, ne se ne T&P 12, blk 44, T-2-N, flow 1085 bbls, 2-in, acid 3500 gals 4150-4250 ft.

Andrews County: Wildcat—T. P. Coal & Oil Co.-Seaboard's Midland Farms 1-D, c nw sw GMMB&S 46, blk 40, T-2-N, elev 2901 ft, salt 1960-2880 ft, Yates sand 2950 ft, Grayburg lime 4460 ft, abnd in sul w 5142 ft.

Cochran County: Slaughter — Magnolia's Mallet 12-A, nec lab 15, leag 50, Scurry CSL, flow 1356 bbls cas, acid 10,500 gals, td 5050 ft; Mallet 18-A, nwc lab 14, leag 50, Scurry CSL, flow 1599 bbls cas, acid 10,500 gals 5010-54 ft; Mallet 11-B, swc lab 7, leag 50, Scurry CSL, flow 1082 bbls cas, acid 10,500 gals, 4965-5040 ft. Texas Co.'s Mallet 3-F, nwc lab 14, leag 51, Scurry CSL, flow 1822 bbls cas, acid 13,500 gals, 5025-71 ft.

Crane County: Sand Hills—Humble's Tubb 6-C, c ne PSL 6, blk 32, 9,240,000 gas, acid 4000 gals 4500-83 ft.

Crockett County: Crockett—O. R. Tipps, tr's University 6, ne sw sw sec 12, blk 14, flow 85 bbls, 2-in, 1449-52 ft; University 9, sw se sw sec 12, blk 14, flow 33 bbls, plus 15% water, 1390-1462 ft.

Crockett County: Wildcats—Amerada et al's Todd 1-H, c sw sw GC&SF 16, blk 10, elev 2411 ft, Crinoidal 6360 ft, Simpson 6632 ft, Ellenburger 6930 ft, abnd 7078 ft. J. B. Moncrief & Helmerich-Payne's Couch 1-A, 2440 ft from s and 2310 ft from e lines GC&SF 30, blk QR, twin to deep, abnd 943 ft.

Ector County: Foster—C. O. Davis et al's Judkins-Atlantic 4, sw sw nw T&P 16, blk 42, T-2-S, flow 3020 bbls, 4290-4423 ft. Drilling & Exploration's Kone 2, c ne nw T&P 43, blk 42, T-2-S, flow 404 bbls, ⅞-in, shot 250 qts 4265-4362 ft, td 4372. Sunray Oil Co.-York-Harper's Bagley 4, nw ne se T&P 17, blk 42, T-2-S, flow 5108 bbls, 4280-4395 ft.

Ector County: North Cowden—Texas Co.'s Holt 22, c nw sw T&P 10, blk 43, T-1-N, flow 766 bbls, shot 540 qts, 4429-4715 ft.

Ector County: Goldsmith—Gulf's Goldsmith 386, nwc ne T&P 29, blk 44, T-1-S, flow 1242 bbls, 2-in, acid 4000 gals, td 4260 ft; Goldsmith 387, sec T&P 19, blk 44, T-1-S, flow 1210 bbls, 2-in, acid 4000 gals, td 4285 ft.

Gaines County: Cedar Lake — Stanolind's Johnson 5, c ne se D&W 6, blk H, elev 3053 ft, abnd 4965 ft.

Hockley County: Slaughter—Honolulu Oil Corp.'s Mallet 21-B, nwc lab 6, leag 49, Edwards CSL, flow 1034 bbls, 2½-in, acid 10,000 gals, 4960-5020 ft. Magnolia's Mallet 19-A, nec lab 14, leag 50, Scurry CSL, flow 1654 bbls, acid 10,500 gals, td 5045 ft; Owens 4, swc lab 87, leag 38, Maverick CSL, flow 980 bbls, acid 10,500 gals, td 5020 ft. Texas Co.'s Slaughter 113, nec lab 89, leag 38, Zavalla CSL, flow 1811 bbls, acid 12,000 gals, 4969-5046 ft; Slaughter 119, sec lab 76, leag 38, Zavalla CSL, flow 1540 bbls, acid 12,000 gals, 4945-5033 ft; Slaughter 120, nec lab 84, leag 38, Zavalla CSL, flow 2109 bbls, acid 12,000 gals 4950-5036 ft. T. P. Coal & Oil Co.'s Graham 2, nwc lab 38, leag 40, Maverick CSL, flow 450 bbls, acid 10,000 gals 4890-4962 ft. Western States Gasoline Corp.'s Frazier 17, 440 ft from n and 4000 ft from w lines PSL 9, blk X, flow 2095 bbls, acid 11,000 gals 4922-5010 ft.

Mitchell County: Iatan—Magnolia's Foster 12, c nw se T&P 7, blk 29, T-1-S, pump 191 bbls, acid 2000 gals, shot 508 qts, 2582-2835 ft.

Pecos County: Wildcat—Pure's T. P. Land Trust 1-A, c sw sw T&P 31, blk 49, tsp 10, elev 3311 ft, anhydrite 1042 ft, Rustler 1185-1460 ft, salt 2610 ft, Lower Castile 3710 ft, Delaware lime 5055 ft, sand 5082 ft, flow 62 bbls, 2½-in, acid and shot 5255-71 and 5080-96 ft, td 6001 ft, pb to 5274 ft.

Pecos County: Abell—Sinclair Prairie's Silverman 4, 1650 ft from ne and 330 ft from se lse, H&TC 10, blk 3, flow 1459 bbls, ½-in, Simpson 5272-85 ft, td 5309 ft.

Terry County: Wildcat—Geo. Livermore's Mabee 1, nec SK&K (C&M) 20, blk D-11, elev 3524 ft, brown lime 4120 ft, San Andres 4430 ft, abnd 5316 ft.

Upton County: McCamey—Gulf's Rogers 14, se se sw MK&T 4, blk 3, pump 217 bbls 27-gr, shot 285 qts 2140-2250 ft, td 2255 ft.

Ward County—Texas Co.'s University 10-E, ne nw ne sec 6, blk 16, flow 816 bbls, shot 110 qts 2624-75 ft.

Winkler County: Emperor—Skelly's Halley 46, nw se nw PSL 15, blk B-11, flow 525 bbls 40/64-in, shot 265 qts, 2755-2890 ft.

Winkler County: Keystone—Sid Richardson & Perry Bass' Jenkins 3, nwc se PSL 13, blk 77, flow 306 bbls, 1-in, shot 320 qts, 3290-3391 ft, td 3401 ft. Standard of Texas' Baird 45, 1713 ft from s and 1650 ft from e PSL 13, blk B-3, flow 308 bbls, 2-in, shot 330 qts 3170-3300 ft, td 3318 ft. Texas Co.'s Campbell 10, swc se PSL 23, blk B-3, flow 295 bbls, shot 240 qts, 3176-3300 ft.

Yoakum County: Wasson—American-Liberty and Atlantic's Herd-Texaco 3, nwc nw 795, flow 346 bbls oil, plus 13% water, acid 10,000 gals, 5050-5246 ft.

WILDCAT STARTS

Coke County—W. F. Morgan et al's J. S. Craft 1, c ne ne H&TC 276, blk 1-A, 3 mi sw Blackwell, lcn.

Howard County—Ray Oil Co.'s W. R. Read 1, sec e½ se T&P 37, blk 30, T-1-N, lcn.

Pecos County—R. G. Pattillo et al's J. M. Nutt-Phillips Pet. 1, c se ne T&St. L. 16, blk 125, spd.

Ward County—Jimmie O'Quinn et al's C. A. Nichols 1, 2310 ft from ne and 330 ft from se lines H&TC 5, blk 5, lcn.

North Texas

Wildcats Predominate Among New Operations

Montague County has group of wildcat and semi-wildcat prospects that have logged ample oil-saturated pay to warrant running pipe for decisive production test. Several are below the district's deepest producing zone. Cooke County wildcat drilling by junk to test Ordovician saturation. Wildcats predominate among new operations.

Montague County: Sinclair Prairie's Henderson 1, 2 miles east by north of Denver, was drilling conglomerate and lime, carrying oil odor and stain, at 6132 ft after two drill stem tests indicated probable production. Formation tester at 6070-85 ft in lime, topped 6067 ft, yielded 90 ft oil-cut mud, 1350 ft free oil and 900 ft salt water, and test at 6085-6100 ft showed 225 ft oil- and gas-cut mud with 1215 ft salt water. Company's Collier 1, 6 miles east of Montague, was coring oil-stained conglomerate 7085 ft, having registered nominal oil or gas shows in using formation tester in upper section of lime, topped at 6078 ft, and Jones 1, 1¼ mile northeast of Forestburg, was drilling at 7742 ft in Barnett shale, topped at 7408 ft.

Continental's Mueller 1, 6 miles east of Bowie, was awaiting orders after yielding 480 ft mud on drill stem at 6599-6621 ft in Viola, topped at 6600 ft. Company's Yowell 1, mile northwest of its Stoneburg pool discovery, drilling plugs from 7-in at 6384 ft in Viola at 6386-91 ft and Drummond 1, 1400 ft north of discovery for this area, entered Bend at 6018 ft, 3 ft high, and was drilling shale 6190 ft. Continental's Penn 1, east offset Gant-Turner pool discovery, drilling conglomerate 6295 ft, having failed to make producer at 6279-87 ft in Bend, topped 6104 ft, 9 ft high.

Cooke County: Lou Stogner et al's Berry 1, 2 miles south of Rosston, plugged back to 5800 ft from 5924 ft to drill by section of drill stem lost in making unsuccessful test of promising oil saturation at 5914-24 ft in Ellenburg, topped at 5810 ft. In Grayson County, Sinclair Prairie's Wheeler 1, wildcat, was showing small amount oil with water after 20-quart nitro shot 3747-55 ft, having plugged back from Ellenburger 3947-4514 ft.

Clay County: Continental's Spring 2, confirmation test for its Spring pool discovery, entered Bend at 5578 ft with saturated lime at 5595-5600 ft, and will run pipe. Continental Pipe Line Co. has built 3½-mile 3-inch outlet from the discovery to tie into its Wichita Falls-Ringgold 4-inch carrier. Bridwell Oil Co.'s Myers 3, third deep test for the Nebtex pool and ½-mile northeast of its Myers 1, pumper in Bend, was drilling shale 5720 ft, top Bend 5506 ft, 29 ft low and 18 ft low to the discovery. L. T. Burns et al's Wynn 5, ¼-mile south of the Mississippian discovery of the Joy pool, drilling 5660 ft in Bend, topped at 5430 ft, 45 ft low.

COMPLETIONS

Archer County: Hull-Silk — Continental's Wilson-McCrory 21, 1350 ft from n and 330 ft from w lines ATNCL 28, pump 148 bbls, acid 11,000 gals, Bend 4635-4703 ft.

Clay County — Akin-Dimock-Costley's Patrick 1, nw blk 82, Byers subdiv, pump 5 bbls oil and 5 bbls water 1120-28 ft. John Webb and Sid Taylor's Taylor-Elliott 1, blk 56, Bacon subdiv, abnd 1870 ft.

Jack County: Hoefle—Hill & Hill's Hoefle 1, J. W. Barrett sur, flow 955 bbls ½-in, acid 2000 gals, Bend 4918-33 ft.

Montague County: Davenport—Lesh & McCall's W. A. Reed 1, nec of s 113-ac T. J. Robinson sur, p&f bbls, perf 2320-30 ft, td 2610 ft, pb to 2350 ft.

Young County: Wildcat—C. T. Robertson et al's Suite 1, nwc TE&L 1591 ft, abnd 1390 ft.

WILDCAT STARTS

Archer County—Paul P. Steed et al's J. L. Prideaux 1, 2333 ft from n and 1399 ft from w lines TE&L 1867, lcn.

Childress County—John A. Murphy et al's S. J. Clark 1, c nw H&GN 16, blk 9, lcn 6500-ft test.

Clay County—E. C. Harlin, Jr. et al's Mrs. D. E. Bentley 1, 700 ft from n and 900 ft from w lines 40-ac lse, blk 54, Specht-McCutchen sur, lcn.

Jack County—Joe A. Worsham et al's H. J. Hensley 1, 1980 ft from n and 3300 ft from w lines of Thomas Martinez sur A-388, 6 mi s Jacksboro, mim 5000-ft test.

Knox County—Seitz-Comegys & Seitz, Inc.'s Millie Winfield 1, sw sw nw BBB&C 181, blk A, lcn.

Throckmorton County — Walter Neustadt and Danciger O&R, Inc.'s R. A. Brown 1, c e½ se TE&L 1617, lcn 5000-ft test.

TEXAS PANHANDLE
COMPLETIONS

Hutchinson County—J. M. Huber Corp.'s Weatherly 25, A&B 26, blk Y, flow 408 bbls on gas-lift, granite-wash 2887-2965 ft, td 2981 ft. Dave Rubin et al's Whittenburg 3-A, H&TC 33, blk 47, pump 60 bbls 2817-55 ft. Harry Stekoll et al's Whittenburg (north) 3-C, TCRy 37, blk M-23, pump 110 bbls 2917-3050 ft.

Moore County—Shamrock O&G Co.'s Burnett 1, H&TC 267, blk 44, 24,500,000 gas, 357 lbs rock pressure, acid 4000 gals, lime 3032-3291 ft, td 3401 ft.

WEST CENTRAL TEXAS
COMPLETIONS

Brown County—Central Texas Gas Co.'s Dennis 1, Thos. Metcalf sur No. 75, 2,420,000 gas, acid 4000 gals 1761-77 ft, td 1854 ft, pb to 1824 ft.

Callahan County: Wildcat—J. R. Hart et al's Ford-Walker 1, near c e½ se se D&DA 42, abnd 860 ft.

Coleman County—Albert Adkisson et al's Barton 1, Wm. Farriss 279, abnd 1570 ft. Robt. W. McKissick et al's Morris 1, J. W. Wyatt sur, flow 89 bbls 1/16-in, shot 30 qts, 3550-66 ft.

Shackelford County—R. H. Roark-Groover-

Rose's Elliott 1, c nw ne LAL 12, elev 1434 ft, abnd 3066 ft. Roeser-Pendleton and Continental's Cook 7-A-118, ETRy 118, pump 95 bbls, sand 1717-23 ft.

OLD WELL DEEPENED

Stephens County—Wittmer-Knight & Ewing's Loving 1-A, OAL 11, otd 3760 ft, pump 8 bbls, shot 240 qts 3542-3668 ft, td 4374 ft and pb to 3668 ft.

WILDCAT STARTS

Coleman County—H. T. Owens et al's Coker 1, c nw se GH&H 72, blk 2, 2 mi n Silver Valley pool, lcn. Dale Smith et al's Morris 1, 135 ft n, 440 e nec GH&H 26, blk 2, but in Dave Breeding sur 728, lcn.

Hamilton County—B. D. K. Oil Co.'s Anderson 1, 660 ft from nw and sw lines Ed Ball sur 2, Pat 2-575, lcn.

East Texas

Hunt County Gets Test On Smackover Trend

Hunt County assigned projected deep wildcat as sequel to Smackover lime lease play along Mexia-Talco fault trend. Upshur County has scheduled Lower Trinity prospect. Wildcat failure in Smith County.

Deep Wildcat: American Liberty Oil Co.'s McNatt 1, southeast corner 39-acre lease, Enos Murphy Survey, 6 mi west by north Greenville, contracted to 8000 ft, or Paleozoics to explore sub-Trinity zones, with support from four companies. In Upshur County, A. H. Carpenter et al's Williams 1, 1¼ miles east by south of Rhonesboro, spudded with Travis Peak as objective.

Failure: H. M. Ogg et al's McClung 1, 2½ miles southwest Winona, Smith County, found Woodbine structurally low and abnd 5705 ft.

Prospects: Texas Co.'s Brown 1, east central Henderson County, drilling 4230 ft in Austin chalk, topped 4012 ft, elev 435 ft, structurally high for area. Magnolia's Campbell 1, Anderson County, drilling 4360 ft.

COMPLETIONS

Bowie County: Wildcat—W. B. Hinton et al's Lumpkin 1, 718-ac tr, Wesley Byers sur, elev 333 ft, Pecan 1462-1980 ft, Woodbine red beds 3040 ft, Georgetown 3340 ft, Goodland 3880-3916 ft, Paluxy 3922 ft, abnd 4125 ft.

Franklin County: Talco—Byrd & Frost's Evans 4, 330 ft from w and 1250 ft from s tr, J. Brantley sur, pump 480 bbls, Paluxy 4099-4257 ft.

Freestone County: Wortham—J. B. Daniel et al's Calme 2, swc lse, R. B. Longbotham sur, pump 56 bbls oil, plus 85% water, Woodbine 2964-66 ft.

Henderson County: Flag Lake—Bert Fields-Topaz Oil Co.'s May 1, 330 ft from ne line lse and 330 ft from river, J. P. Tarkington sur, abnd Woodbine 2968-3263 ft.

Leon County: Long Lake—FHE Oil Co. et al's Standard of Kansas 3, 467 ft from nw line lse, 934 ft s No. 2, S. Sanchez sur No. 7, flow 66 bbls, 5/64-in, Woodbine 5281-83 ft.

Wood County: Hawkins—Humble's Allen 7-D, 444.7-ac tr, Geo. Brewer sur, pump 43 bbls 20-gr oil, plus 6% bs&w, Woodbine 4646-4808 ft, td 4922 ft; Atkins 8, 3266 ft from n and 1400 ft from w of 341.44-ac tr, J. P. Moseley sur, flow 428 bbls ¼-in, Woodbine 4701-06 and 4837-43 ft, td 4865 ft; Bryan 6-B, 469 ft from n and 536 ft from e lse, W. Parker sur, flow 191 bbls ¼-in, 4503-14 ft, td 4614 ft; E. W. Moore 1-A, 1764 ft from s and 467 ft from e of 96.89-ac tr, Jas. Pollock sur, 408 bbls ¼-in, 4590-4600 and 4652-56 ft, td 4746 ft; W. S. Shamburger 2-B, 467 ft out sec 122½-ac tr, J. McAnulty sur, flow 354 bbls ¼-in, 4791-4822 ft, td 4897 ft; E. M. Slaughter 3-B, 89.94-ac tr, M. A. Esparcia sur, flow 53 bbls ¼-in 4631-57 ft, td 4782 ft; J. B. Smith 3, 1225 ft w No. 1 and on 126.45-ac, Wm. Herrington sur, 389 bbls ¼-in, 4791-98 and 4873-78 ft, td 4975 ft. S. H. Killingsworth et al's Green 2, 467 ft out sec 40-ac lse, 230 ft ne of 5100-ft failure, J. P. Moseley sur, pump 342 bbls 22.7-gr, 4860-75 ft, td 4897 ft. Mudge Oil Co.'s Hammill 1, 467 ft from s and 387 ft from w of 50-ac lse, J. P. Moseley sur, flow 338 bbls, 4775-4815 ft, td 4912 ft.

WILDCAT STARTS

Hunt County—American Liberty Oil Co.'s J. P. McNatt 1, 660 ft out sec of 358.61-ac lse, Enos Murphy Sur, 6 mi w by n Greenville, mim for 8000-ft, or Smackover lime test.

McLennan County—J. K. Hughes et al's L. C. McCamie 1, 1600 ft from nw and 2000 ft from ne lines I. B. Bailey sur, dk.

Upshur County—A. H. Carpenter et al's S. P. Williams 1, 740 ft from s and 745 ft from w lines blk 6, Estevan Moro sur, 1¼ miles east by south Rhonesboro, Travis Peak test, cem surface pipe. B. B. Orr and F. R. Jackson's Carter 1, 660 ft from Upshur County line and 660 ft s line W. M. Whittaker sur, lcn.

Southwest Texas

Wildcat Activity Takes Big Upward Swing

First reports of tests to be drilled in unproven territory during last week were greater than for any corresponding period in many months. Projects include both deep and shallow objectives.

DeWitt County: Adams Oil & Gas Co.'s Berch 1, 3 miles east of Yorktown, is making a third test through perforations after showing condensate at 7208-12 and 7212-17 ft, the latter having some salt water, from Wilcox.

Goliad County: Magnolia's Wilkinson 1, Berclair prospect, has reperforated and will make a series of tests. Hole was drilled to 5398 ft and perforations at 3210-12 showed 1620 ft of mud cut with gas.

Hidalgo County: McCollum Oil Co. is opening a field with McSweeney 1, 4½ miles south of Donna. Bottom 6567 ft, 5½-in set 6310 ft, perforations 6033-38 ft flowed condensate and wash water; not fully cleaned.

Nueces County: Stanolind's LaPrelle 1, North Luby, will drill deeper from 8508 ft, after showing condensate in new sand at 8303-12 ft.

San Patricio County: F. M. Boynkin's

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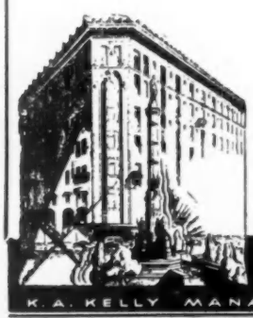

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Reed 1, nearly mile west of Midway field, flowed clean oil on drill-stem test at 6090-6100 ft and is completing.

SOUTHWEST TEXAS
COMPLETIONS

Duval County: Kreis—Schimmel & Hurley's Weatherly 1, sec 88, 2 mi s of field, abnd 3294 ft.

Duval County: Hoffman—Magnolia's Well 28 (113), sec 113, 154 bbls 22-gr, ¼-in chk, 30 lbs tp, 140 lbs cp, sand 2632 ft, td 2637 ft.

Duval County: Piedre Lumbre—Magnolia's DCRC 12, sec 95, 12 bbls 20-gr on pump, perf 1965-70 ft & 1987-90 ft, td 2143 ft.

Duval County: Wildcat—H. Coquat's Southland 3-C, sec 1, 1½ mi nw Southland, abnd 6006 ft.

Jim Hogg County: Colorado — Humble's King-Colorado 60-B, 133 bbls 46.4-gr, 3/16-in chk, 220 lbs tp, 600 lbs cp, gas/oil ratio 250/1, sand 2965 ft, td 2975 ft.

Starr County: LaReforma — Baldridge & King's F. Olivares 1, sh 19, abnd 6256 ft.

Starr County: Ricaby—H. C. Bishop & J. O. Moss' Ricaby 3, blk 12, abnd 1706 ft.

Starr County: Rincon—Continental's Slick 65-A, sec 485, 178 bbls 40.1-gr, 12/64-in chk, 410 lbs tp, 565 lbs cp, gas/oil ratio 327/1, perf 3427-37 ft, td 3770 ft; Slick 64-B, sec 506, 237 bbls 41.6-gr, 12/64-in chk, 500 lbs tp, 600 lbs cp, gas/oil ratio 352/1, perf 4002-15 ft, td 4030 ft.

Starr County: Wildcat — L. H. Wentz' S. Gonzales 2, tr 10-C, por 105, abnd 2615 ft.

OLD WELL DEEPENED

Webb County: Glen—Glen Harroun et al's Bruni 1, blk 51, 15,000,000 gas, 800 lbs rp, perf 2132-42 ft, sand 2132 ft, deepened fr 2165 ft to 3185 ft.

WILDCAT STARTS

Duval County—Mills Bennett's Benavides 3, 660 ft ne and nw lines lot 13, sec 18, Cole sub, 4 mi ne Bruni, lcn 2900-ft test, Earl Callaway's Parr 1, 990 ft n, 661 ft e lines lot 43, W&S sub Oricones ranch, 8 mi se Benavides, lcn 6500-ft test.

Starr County—Edwin Schmitt's Gonzales 1, 330 ft n, 800 ft e lines of sh 232, por 69, 8 mi nw Roma, mi 2200-ft test, L. H. Wentz's S. Gonzales 2, 660 ft n, 1650 ft w lines 701.8-ac lse, tr 10-C, por 105, 11 mi nw Rio Grande City, abnd 2615 ft.

Webb County—Anderson & Stieren's P. de la Garza 1, 660 ft s & e lines w½ Sec 262, 2 mi n Carolina-Texas field, dr 2040 ft on 2500-ft contract, O. W. Killam's Puig 1, 660 ft n and w lines blk 120, Edgington sub, Albercas gr, 9 mi se Mirando City, lcn 2500-ft test. Killam & Salinas' Bruni 1, 660 ft s, 2310 ft e lines blk 2, Brown sub, Albercas gr, 10 mi se Mirando City, lcn 1200-ft test. Rowe & DeLange's Buckley 1, 1980 ft s & w lines sec 203-1/3, 15 mi n Oilton, mi 2500-ft test; will drill second well after completion of present.

LOWER GULF COAST
COMPLETIONS

Bee County: Thompson—Shield Oil Co.'s Heard 1, G. Roach sur, 10 mi se Beeville, 3,821,600 gas spray, 40.8-gr condensate, ⅜-in chk, 1800 lbs tp, 1950 lbs cp, perf 4855-65 ft with 15 shots, sands 4855-68 ft, td 5320 ft. Opens field.

Jackson County: Ganado — Humble's M. Branch 2, sec 2, 564 bbls 36.5-gr oil, ¼-in chk, 650 lbs tp, 800 lbs cp, gas/oil ratio 419/1, sand 6446 ft, td 6451 ft.

Jackson County: Lolita—Skelly's M. Mitchell 3-V, S. F. Austin League, abnd 5965 ft.

Jackson County: N. LaWard—Magnolia's Gordin 1, lot 3, 121.2-bbls 25.3-gr, 7/64-in chk, 500 lbs tp, 825 lbs cp, gas/oil ratio 242/1, perf 5196-5216 ft, td 5225 ft.

Jackson County: West Ganado—Pure's Neibuhr 1, W. Menefee sur, 121.44 bbls 24.8-gr, ⅛-in chk, 500 lbs tp, 70 lbs cp, gas/oil ratio 254/1, perf 4770-75 ft, td 4850 ft.

Jackson County: Texana—Gulf's Simons 1, Wells Lge, 8000 ft sw field, abnd 7803 ft.

Jim Wells County: Agua Dulce—Chicago Corp.'s Wardner 35, sec 3, 192 bbls oil, ⅛-in chk, 1135 lbs tp, 1325 lbs cp, perf 6423-38 ft, td 6545 ft.

Jim Wells County: Seeligson—Sun's Miller 4, sec 65, 203 bbls, 7/64-in ch, 1200 lbs tp, 1375 lbs cp, gas/oil ratio 692/1, perf 5954-59 ft and 5978-81 ft, td 6000 ft.

Jim Wells County: Wildcat—Navarro's Almond 1, sec 12, 7000 ft sw Alfred field, abnd 5012 ft.

Nueces County: Agua Dulce — Renwar's Knight 5, sec 175, 238 bbls 42.7-gr, ¼-in chk, 1220 lbs tp, 1480 lbs cp, gas/oil ratio 600/1, perf 7150-60 ft, td 7250 ft. Sam E. Wilson's Mosley & Dryden 1, sec 205, abnd 7180 ft.

Nueces County: Minnie Bock—Windsor Oil Co.'s Parr 3, sec 37, 22.05 bbls 23.4-gr, 1-in chk, 20% sw, gas/oil ratio 47/1, perf 3708-13, td 3920 ft.

Nueces County: Stratton — Seaboard's San Antonio Jt Stk Land Bank 1, sec 19, 95 bbls 35.5-gr, ⅛-in chk, 1725 lbs tp, 2700 lbs cp, perf 6700-5 ft, td 7329 ft.

Nueces County: Wildcat—Crown Central et al's Womack 1, sec 9, 3½ mi nw Luby field, abnd 7509 ft.

Refugio County: McFaddin—Rutherford et al's Fagan 9-C, N. Fagan sur, 69.2 bbls 30.8-gr, 3/32-in chk, 575 lbs tp, 990 lbs cp, gas/oil ratio 427/1, perf 5640-46 ft, td 5655 ft.

San Patricio County: Odem — Seaboard's Welder 8-B, Juan Hart & Sons gr, 141 bbls 37.9-gr, ⅛-in chk, 800 lbs tp and cp, gas/oil ratio 404/1, perf 5383-97 ft, td 5401 ft.

Victoria County: Cologne—H. L. Edwards' Hornstein 1, blk 43, 35 bbls, ¼-in chk, 920 lbs tp, 1400 lbs cp, perf 4830-35 ft, td 4840 ft.

Victoria County: Wildcat — Transwestern's J. A. McFaddin 1-B, A. L. Fernet sur, 3 mi nw McFaddin field, abnd 6512 ft.

WILDCAT STARTS

Bee County—Tide Water's Hall 1, 1862 ft n l 699-ac lse, 925 ft e of w l J. W. Williamson sur, 2 mi nw Tuleta, lcn 8500-ft Wilcox test.

Brooks County—Sun's Villareal 1, 4000 ft n'ly n 1980 ft e'ly e lines lse, sh 4, LaEncenta gr, 4½ mi w Rachal, lcn.

Jackson County—Rowan & Hope's M. Sehar 1, 660 ft n and e lines tr 47, Bennett ranch sub, Garcia 3 Lge, 3½ mi se Inez, lcn 5500-ft test.

Nueces County—Morgan, Wynne & Morgan's Gerdes 1, 660 ft n and w lines of centr 225.1-ac tr, sec 7, dr 3500 ft on 7200-ft test. Southern Minerals Corp.'s Whitten 1, 660 ft se and sw lines sw ¼ 153, sp on 7500-ft contract.

Willacy County—Sunray Oil Co.'s Kerlin 1, 660 ft n and e lines lot 8, blk 3, Hubmer sub, lcn 8300-ft test.

SOUTH CENTRAL TEXAS
COMPLETIONS

Bexar County: Wildcat—V. E. Nicholson's J. Skrzyski 1, McNemor sur, 2½ mi e Adkins, oil show 1340-65 ft, abnd 1365 ft.

Edwards County: Wildcat—Dan Auld et al's L. Hankins 1, sec 63, 26 mi ne Rock Springs, abnd 4311 ft.

Frio County: Pearsall—Falcon-Seaboard & Dunwoody's Halff & Oppenheimer 1, sur 15, 76 bbls 26-gr, 21,584 gas, ⅛-in chk, 420 lbs tp, 180 lbs cp, sand 3907 ft, 5½-in 3938 ft, td 3950 ft.

Wilson County: Wildcat—W. L. Marshall's G. Pierdolla 1, San Miguel sur, 2 mi w Lavernia, abnd 1582 ft.

OLD WELL WORKED OVER

Wilson County: Wildcat—W. L. Marshall's Sanders 1, Herrera gr, 1 mi nw Lavernia, attempted to rework 1240 ft, junk in hole, abnd.

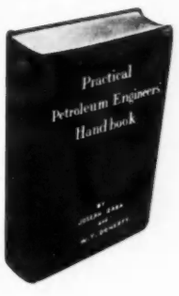
WILDCAT START

Lee County—Holland Oil Co.'s A. Richter 1, 660 ft w, 1250 ft n lines w 80 ac of 194-ac tr, L. P. Rucker sur, 5½ mi nw Lincoln, lcn 7000-ft test.

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

SECOND EDITION
Revised and Enlarged

By JOSEPH ZABA, E.M.M.Sc.
and
W. T. DOHERTY



This book was written by practical oil men. The tables were compiled so that they can be used by anyone to meet practical field situations without further calculations, and will fit 99% of the conditions under which the average operator is working in the field.

The second edition of the PRACTICAL PETROLEUM ENGINEERS' HANDBOOK has been completely revised and enlarged. The many changes which have been made during the past two years in the Standard Specifications of the American Petroleum Institute, particularly in pipe specifications, are incorporated in the new edition. Several tables are rearranged and charts enlarged to facilitate their use. Table of Contents and Index are more complete. Also about 90 pages of new formulae, tables, charts and useful information have been added.

This handbook was compiled and published for the purpose of saving the time of operators, engineers, superintendents, foremen and others.

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Texas Gulf Coast

Three Pay Horizons Opened at Stowell

Three pay sands established at Stowell, Jefferson County; wildcat in Chenango area, Brazoria County, opens gas production; new sand tested in Lucky area, Matagorda County.

Jefferson County: The Stowell field now has three producing horizons with McCarthy and Brown & Wheeler completing Stewart Unit 1 in the 9000-ft sand. The well flowed 793 bbls through ¼-in choke. Exact footage on the sand tops has not been released, however the discovery well was completed in the 8800-ft section while Englin 1 produced gas and distillate from 8447 ft.

On the north flank of Big Hill dome, Stanolind is testing Davidson 1 in the upper sections after drilling to 10,115 ft. Several sands have been tested after casing was cemented at 8754 ft.

Brazoria County: Stanolind has completed Murchison 1, Chenango area, making distillate well at 10,012-021 ft. Immediately after perforations were made tubing pressure mounted to 2200 pounds, the rate of distillate flow estimated at 2 barrels per hour with a slight trace of salt water. Hole is bottomed at 10,497 ft, casing at 10,052 ft. Four sets of perforations were made between 9500 and 10,000 ft before the final completion, all yielding salt water.

Matagorda County: Stanolind is testing a new sand in Huebner 2, Lucky area. Perforations at 8941-43 ft, produced 90 percent salt water and the remainder oil. The perforations have been squeezed for another test. The regular field sand produces from the Frio around 8880 ft.

Harris County: Pure Oil Co. is making a second production test on Albanese 1, Alief area wildcat, after failing in a lower sand indicated on electrical survey. With casing cemented at 8420 ft and bottom 8638 ft, operators plugged back to 8385 ft and will perforate again.

George W. Strake and Cash & Reynolds are recompleting Phenix 1, discovery well, Aldine area. Perforations at 7186-93 ft produced 50 percent oil and 50 percent water before the gas-oil ratio mounted to 25,000/1. These perforations were squeezed and new shots made at 7190-93 ft.

COMPLETIONS

Brazoria County: West Columbia—Hogg Oil Co.'s Carroll 1, Lot 7, J. H. Bell sur, blew out 1437 ft, caught fire, killed & capped, drilled ahead, flow 113 bbls ¼-in chk, 25.3-gr, gor 100/1, td 1649 ft.

Chambers County: Fig Ridge—Sun's McCarthy 2, 1131 ft fr e l and 1980 ft fr s l HTB 93, perf 8545-63 ft, flow 139 bbls 19 hrs, ¼-in chk, gr 35.3, gor 716/1, td 8606 ft. Sun's Pipkin 2, 467 ft fr n l & 467 ft fr w l HTB 96, pay 8514 ft, flow 586 bbls ¼-in chk, tp 1025, gor 664/1, td 8573 ft.

Fort Bend County: Blue Ridge—R. L. P. Production Co.'s Gulf 5, 900 ft fr w l and 300 ft fr n l 50-ac tr Thomas Habermacher sur, pump 23 bbls, 24.2-gr, td 4092 ft.

Harris County: Pierce Junction—R. E. Smith's Settegast 2, 1430 ft fr n l Joseph Kopman sur, flow 148 bbls ⅛-in chk, tp 200 lbs, cp 545, gor 300/1, gr 35.6, td 3397 ft.

Jefferson County: Lovell Lake—Humble's Broussard Trust 34, 1750 ft se Broussard 18, pay 7719 ft, flow 84 bbls ⅛-in chk, tp 2250, gor 8400/1, td 7721 ft.

Montgomery County: Lake Creek—Superior's McWhorter 3-A, 1500 ft fr most n'ly s l of lse, T. J. Nichols sur, perf 9240-50 ft, salt water, abnd 10,499 ft.

Montgomery County: Conroe—Danciger Oil & Refining Co.'s (was John H. Blaffer) Brent 1, 466 ft fr e l & 680 ft fr s l 59-ac tr, D. W. Collins sur, abnd 5089 ft.

Montgomery County: Magnolia—Glenn H. McCarthy's Tucker 1, 537 ft fr w l and 810 ft fr n and s lines S. N. Huston sur, wildcat 1½ mi sw Seyle 1 discovery, salt water in 9600 ft sand, abnd 10,017 ft.

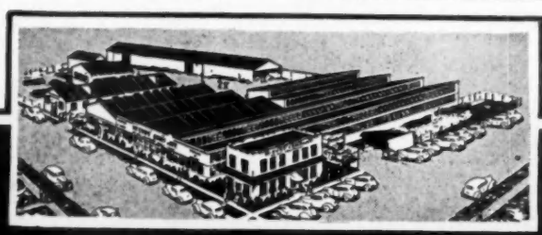
Wharton County: Spanish Camp—T. J. Hudgins' Menefee 1, 660 ft fr s and w lines 200-ac tr, S. F. Austin Lge, sand 3732-40 ft, perf 3000-10 ft, 1,800,000 gas, 9/64-in chk, td 3740 ft.

WILDCAT STARTS

Montgomery County—Superior's McMahan 1, Deering prospect, 7 mi sw Conroe, 736 ft n & 592 ft w ne cor Perry Winslow 100-ac tr in T. H. Thomas sur, lcn 12,000-ft test.

Newton County—Kirby's Muldoon 1, 2 mi sw Bon Weir, 660 ft fr sw & se lines of 22-ac tr, J. Delaney sur A-105, mim 9500-ft test.

Wharton County—J. V. Pierce Withers' Wharton Bank & Trust 1, Lane City prospect, 660 ft fr nw l & 600 ft fr sw l blk 67, center 40-ac lse, S. Castleman sur, A-12, lcn 6000-ft test.



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South Louisiana

First Oil Production Opened at Bay DeChene

Oil production established at Bay DeChene, Jefferson Parish; thick sand section found in second well at Hayes, Calcasieu Parish; new sands at East White Lake, Vermilion Parish, still testing.

Jefferson Parish: Oil found in Bay DeChene area, heretofore productive of gas, with Texas Co. completing La-Fourche Basin Levee 2-B, 31-19s-24e, for 325 bbls, 3/16-in choke; 60 perf 7470-7500 ft in Miocene, bottom 9887 ft, tubing pressure 1150 pounds. The oil producer is third well on the prospect, a gas well producing from 2460-90 ft was completed in 1941 and a second test had salt at 8680 ft.

Calcasieu Parish: Gulf is planning production test on Calcasieu National Bank 2, Hayes area, after setting casing at 11,578 ft in 11,784-ft sidetracked hole; logged a 44-ft sand at 11,611-657 ft. Previous to finding the sand, shaley sand at 11,574-608 ft, a thin break, then the sand section which showed up considerably on third curve on electrical survey. The original hole was drilled to 11,784 ft where drill pipe stuck. Gulf's Calcasieu 1 blew out and caught fire July 21, 1941, abnd 10,534 ft.

Vermilion Parish: Union Oil Co. continues testing Vermilion Parish School Board 3-A in a new shallow sand which would involve dual completion. If completed through perforations at 5950-82 ft in Upper Miocene, the field will have six producing sands in as many wells; however, first test at this level flowed 152 bbls in 24 hours through 10/64-in choke then gradually went to gas. Operators are now attempting to recomplete in the same horizon. The other sand section at 6415-20 ft flowed at the rate of 244 bbls through 10/64-in choke on a drill-stem test. The field's other producing horizons are at 10,500 ft, 10,000 ft, 7300 ft, and 9800 ft.

Acadia Parish: A major extension or a new field is assured on the west side of the Tepetate with Vincent & Welsh's Ardoin 1 blowing out, spraying gas and 44-gravity oil, resulting in the operators cementing drill pipe at 9445 ft. It is not definitely known from which sand the gas is blowing, since shows were encountered at 9220 and 9350 ft.

COMPLETIONS

Iberia Parish: Avery Island Wildcat—Humble's Petit Anse 1, begin sw cor sec 25, go n alg w l of sec 2724 ft, thence e at ra 1810 ft in 25-13s-5e, salt 6200-6334 ft, gas sand 6335-63 ft, flow gas but controlled, salt 6481-7000 ft, tests made in 6300 ft, 6000 ft, and 5800 ft levels, abnd in salt 7000 ft.

Jefferson Davis Parish: Thornwell Discovery—Cities Service Lacassine Land Co. 1, 660 ft s & e of nw cor se¼ 35-11s-5w, opens new field, perf 10,319-21 ft, flow gas & salt water, perf 9854-58 ft, tested salt water, perf 9634-38 ft, flow dist, perf 9638-44 ft, flow 12,000,000 gas, estimated 100 bbls dist 8/64-in chk, gor 50,000/1, tp 2720, td 10,325 ft.

LaFourche Parish: Golden Meadow—Michael & Means' Cheramie 1, 160 ft n & 75 ft w of sw cor 23-19s-22e, oil sand 2640-51 ft, Perf 2642-50 ft, flow 40 bbls 10/64-in chk, td 2655 ft.

Plaquemines Parish: Venice—Tide Water's Buras Levee 14, 2210 ft s & 700 ft w ne cor 28-21s-20e, perf 10,691-728 ft, flow 317 bbls 9/64-in chk, gor 1225/1, td 10,988 ft.

St. Charles Parish: Paradis—Texas Co.'s LLE-Paradis 22, 3300 ft e & 660 ft n of sw cor 5-14s-20e, perf 10,352-378, flow 486 bbls 3/16-in chk, tp 1650, gor 641/1, gr 37.6, td 10,400 ft.

Vermilion Parish: South Gueydan—Union Sulphur's Baker 4, 600 ft s & 1540 ft w of ne cor s½ 3-12s-1w, perf 10,292-295 ft, flow 61 bbls dist & 1,500,000 gas 9/64-in chk, td 10,332 ft.

North Louisiana

Two 10,000-Foot Tests Planned for North Lisbon

Two Smackover lime 10,000-ft locations staked in North Lisbon as operators test in another operation; Richland Parish wildcat prepares to test; Winn Parish wildcat to go to 8000 ft.

North Lisbon: Union Producing Co. staked two 10,000-ft Smackover lime tests: Duke 1, SW 18-21n-4w, and Morrow Unit 1, NE 19-21n-4w, Claiborne Parish. Union Co.'s McDonald 1, C SW 13-21n-5w, deepest test drilled in North Louisiana, going to 12,592 ft, plugged back to 11,872 ft where it tested 38 joints of distillate and 100,000 gas, will not try for production at that level as gas has hydrogen sulphide. Perforated at 9100 to 9500 ft where drill stem test had shown 400,000 cubic ft sweet gas but packer failed to hold; making another test.

Richland Parish: Bobby Manziel and associates prepared to perforate for production test at 3126-50 ft in Cretaceous, at Wooten 1, NE NE 28-17n-5e, wildcat four miles southeast Monroe gas field; total depth is 4004 ft, 5½-in cemented 3300 ft.

Winn Parish: H. L. Hunt rigged for 8000-ft wildcat, Goodpine F-24, SW SE 13-12n-5w. Hunt added 3040 acres to Winn Parish holdings in townships 11 and 12 north, ranges 4 and 5 west.

COMPLETIONS

Caddo Parish: Hosston—Transport Oil Co.'s Crystal Fee 8, 24-21n-16w, pump 18 bbls, 1008 ft.

Claiborne Parish: Homer—Texas Co.'s Shaw A-21, 25-21n-8w, junked 1431 ft.

LaSalle Parish: Nebo—H. L. Hunt's Goodpine F-84, ne sw 21-7n-3e, pump 194 bbls, 4139 ft.

LaSalle Parish: Wildcat—H. L. Hunt, Tensas Delta B-1, se ne 35-5n-4e, abnd 7142 ft.

WILDCAT STARTS

LaSalle Parish—H. L. Hunt, La. Delta C-1, 1980 ft se cor 33-5n-5e, rig.

Winn Parish—H. L. Hunt's Goodpine F-24, 13-12n-5w, mat. (8000-ft test).

Arkansas

Arkansas Spacing Rules Given OPC Approval

OPC last week approved spacing regulations for South Arkansas condensate fields and thereby gave permission for 21 tests to be drilled: Macedonia, 11; Dorcheat, 7; McKamie, 3. Dorcheat's spacing changed from 40 to 80 acres to conform with OPC. Tests must be drilled in center of north half of south half of quarter. Macedonia has 80-acre rule and McKamie, 160. No drilling has been done in these three fields since last December 23.

Quarterly survey of reservoir pressures and operating gas-oil ratios in 13 of 15 controlled fields in South Arkansas shows daily average production of 74,000 barrels of oil and condensate, with an average depletion rate of 7.1 percent annually of proven reserves. Corrected reserve figures in these fields gives them 370,640,000 barrels. Altogether state has 28 oil or condensate reservoirs located on 147,000 productive acres, with a total of 2986 producing wells. The 15 controlled pools have 513 wells on 15,700 acres.

Midway: Added one producer last week and one location; five are drilling, making six active operations for the field.

COMPLETIONS

Columbia County: Stephens—R. H. Crow's Smart A-2, nw se sw 12-15-20, elev 215 ft, pump 225 bbls 12 hrs, td 3395 ft (Travis Peak).

Lafayette County: Midway — Barnsdall's Bond 4, se sw 11-15-24, flow 31 bbls hourly, ¼-in ch, grav 36.5; td 6436 ft.

Union County: East Schuler (Burns) — Root's Cottrell 1, ne ne 23-18-17, flow 96 bbls, td 5833 ft.

Union County: Smackover — Curtis Kinard's Holloway 1, sw sw 5-16-16, pump 40 bbls, td 2749 ft.

Mississippi

Tinsley Dome Has Only Six Operations Active

Only six operations current at Tinsley Dome, Yazoo County, of which four are waiting on standard rig and two are rigging.

Pearl River County: Placid Oil Company abandoned first of a series of five wildcat tests on a large block in Pearl River County and staked location for the second, nine miles south of the abandoned hole.

Sharpsburg-Pickens: Phillips Petroleum Co.'s Whitworth 1, C 4-11n-3e, Madison County, north offset to the discovery well of this field that now has two producers, after checking 7 ft low on chalk at 3861 ft (elevation 212) topped Eutaw 7 ft high at 4782 ft and topped the sand at 4820 ft, 8 ft high.

COMPLETIONS

Yazoo County: Tinsley Dome—Union's Cessna 4, 526 ft n & 3495 e fr swc 18-10n-2w, elev 314 ft, Wilcox 1942, Midway 4028, Selma chalk 4902 ft, Woodruff 5008 ft, abnd 5015 ft.

Pearl River County: Wildcat—Placid Oil Co.'s Southern Mineral Corp. 1, swc 27-1s-14w, abnd 5095 ft.

WILDCAT START

Pearl River County—Placid Oil Co.'s Southern Mineral Corp. 2, sw se 9-3s-14w, mat.

California

Project 16,000-Foot Test For Rincon Area

Third test for Cretaceous production in Mendota-Cheney Ranch area, Fresno County staked; two Kern County wildcats abandoned; preparations under way for spudding of super-deep test in Rincon field, Ventura County.

Fresno County: Superior and Jergins Oil Co. staked Cheney Ranch 3, wildcat in the Mendota-Cheney Ranch area in sec 30-14-13, to the west of Cheney Ranch 1 and 2, both of which obtained small distillate production in interval 7200-7300 ft. Area is 20 miles north of Coalinga.

Kern County: Wilshire Annex Oil Co.'s Amalgamated 1, sec 17-25-28, Jasmine area, bailed sulphur water and trace of oil from plugged bottom at 1126 ft and is being abandoned. Bottom was at 1303 ft. Second test staked to the south.

Continental Oil Co.'s semi-wildcat Mabury 2 in the Shale Hills area abandoned in gray sand at 1309 ft.

Ventura County: Chanslor-Canfield, Midway Oil Co. is moving its heaviest electric equipment into the Rincon field to drill C-10, a super-deep test which company may take to 16,000 ft or more. Company has drilled two deep tests in this area to below 10,000 ft, the last, C-9, making 100 bbls daily by heads currently while awaiting gas-lift equipment. Coordinates worked out by com-

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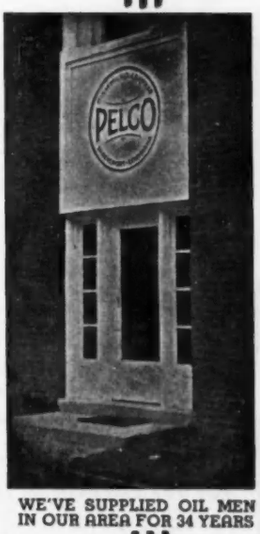

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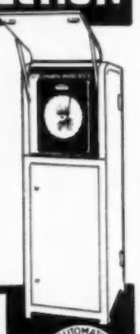

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pany point to production possibilities between 11,000 and 16,000 ft.

COMPLETIONS

Fresno County: Helm—General's Esperoad 75-35, 2310 ft s 990 w se cor 33-16-17, trace oil light flow salt water, perf interval 8040-8055 ft, 8080-8095 ft, td 8266 ft, Kreyenhagen 7621 ft, Eocene 8095 ft, abnd.

Fresno County: Jacalitos Hills — Wilshire Annex Oil Co.'s 8-23e, 330 ft n, 330 e sw cor 23-21-25, flow oil, no est, 24 ft perf 3722 ft, td 3722 ft.

Fresno County: Richgrove-Jasmine-Delano —Wilshire Annex Oil Co.'s Amalgamated 1, 1650 ft s, 990 e nw cor 17-25-28, Vedder absent, td 1309 ft, granite 1268 ft, thin oil sand 1104 ft, abnd.

Kern County: Coles Levee — Richfield's KCL-A 56-23, 1759 ft n, 1899 ft w se cor 32-30-25, flow 875 bbls, 33-gr, 2-1 ¼-in beans, 125/1050 lbs; 332 ft perf 9100 ft, oil sand 8445 ft, td 9149 ft.

Kern County: Devils Den—Continental's Mabury 2, 330 ft n, 330 w se cor 24-26-18, cored oil stains topped 1195 ft, Kreyenhagen 758 ft, abnd 1309 ft.

Kern County: Dyer Creek—Dyer Creek Oil Co.'s Church 1, 660 ft s, 330 e w¼ cor 2-26-27, cored 6 ft oil-stained sand 2105 ft, Pyramid Hills sand 2528 ft; grit zone 2586 ft, barren Vedder 2593 ft, abnd 2612 ft in gray sand.

Kern County: Mount Poso—Union's Glide 1-7, 695 ft n, 1713 e sw cor 7-27-28, barren Vedder 2623 ft, abnd 2884 ft in sand and shale.

Kern County: Mountain View—Hogan Petroleum Co.'s Bahrenburg 1A, 1650 ft s, 1930 w ne cor 32-30-29, gray sand 8440 ft, abnd 8687 ft in gray sand.

Los Angeles County: Dominguez—Hileford Associate's Stevens 1, 258 ft s, 130 w sw cor Main & Walnut, 8th zone gray sand 7707 ft, oil-stained sand 7769 ft, abnd 8110 ft.

Ventura County: Bardsdale Area—San Marino Oil Co.'s Capital Crude 1, 450 ft s, 115 e nw cor 7-3-19, flow 106 bbls 27.3-gr, 320 ft perf 1075 ft, td 1868 ft.

Ventura County: Ventura Avenue — Tide Water's Hartmann 31, 900 ft n, 3800 e c l No. 11, flow 266 bbls 32-gr, 56/64 bean, 100/450 lbs, 66 ft perf 8295 ft, td 8300 ft.

OLD WELLS REDRILLED

Fresno County: Coalinga Northeast — Superior's Husong 4, 990 ft n, 990 w e¼ cor 18-19-16, flow 660 bbls 26.2-gr, 26/64 bean, 970/2850 lbs, perf 8026-8036, pb 8136 ft, td 8255 ft.

Los Angeles County: Dominguez — Shell's Reyes 127, 590 ft s, 3930 e nw lease cor, recompleted on gas lift, 49 bbls, pb 6022 ft, td 6270 ft. Union's Callender 71, 4319 ft w, 1523 n Victoria and Central, flow 589 bbls 30.8-gr, 40/64-in bean, 260/640 lbs, otd 7485 ft, redrilled 7485 ft (correct) 609 ft perf 7483 ft.

Los Angeles County: Wilmington—MacDonald & Burn's Banning 2, 150 ft s, 150 w Denni & Lakme, pump 179 bbls, 13.5-gr, cut 24%, perf 2669-2855, 2916-3176, 3342-3623 ft, td 3625 ft, otd 2960 ft.

WILDCAT STARTS

Fresno County—Superior's Cheney Ranch 3, 30-14-13, grading, Mendota area.

Los Angeles County — Continental's Turnbull Comm. 3, 13-2-11, lcn. Puente Hills-Turnbull Canyon area.

Orange County—Texas' Byington 1, 6-4-10, lcn. Anaheim-Buena Park area.

Michigan

Lake Discovery Needs Casing; Gets Four Offsets

First promising discovery of year brings four starts in Sauble area, Lake County.

Sauble: With 1400 ft open hole apparently caving, W. P. Shoemaker's Matson 1, NE SE NW 16-19n-14w, Lake County, has dropped from 206 bbls natural to 56 bbls in 10 days with adverse weather delaying casing program. Wildcat is producing 35.2-gravity oil from Traverse lime at 2114 ft. Shoemaker reported farmout deals with five companies on spreads ranging from 80 to 200 acres in each deal. Louis Rose, Swanson Consolidated, Gordon Oil Co. and Freeman Oil Co. were first to take farmouts in play.

Reed City: Ohio Oil Co. is cleaning out preparatory to deepening from 3600 to 4690 ft on Gingrich 4, SW NW 31-18n-10w, southwest flank.

COMPLETIONS

Gladwin County: Wildcat — Ervin Major's State 1, w½ sw nw 18-20n-2w, Dundee lime 4010 ft, abnd 4178 ft.

Lake County: Reed City—Louis Rose's Linder 1, n½ se se 25-18n-11w, Monroe lime 3625 ft, pay 3654 ft, swab 46 bbls, td 3667 ft.

Ottawa County: Wildcat—Southwest & Associated's Blacmer 1, ne se ne 15-8n-14w, Traverse 1877 ft. td 1890 ft, pump 14 bbls after acid, new field.

Roscommon County: Richfield—McClanahan Oil Co.'s Bauman 1, n½ se ne 29-24n-1w, Monroe lime 4161-4193 ft, 1200 ft oil 18 hrs, acid 500 gal, flow 195 bbls in 19 hrs, td 4193 ft.

CORRECTION

Arenac County: Wildcat—Rayburn & McKenna's Sivier 1, se nw sw 36-19n-4e, reported in these columns March 16 as abandoned, according to W. T. McKenna still is active, fishing at 2875 ft.

WILDCAT STARTS

Lake County—C. N. Wallace's Wilder 1, n½ ne nw 9-18n-11w, lcn.

Montcalm County—Chapman Oil Co.'s Swift 1, sw nw ne 2-10n-7w, rig.

Osceola County—Turner Pet. Corp.'s Hemund 1, c sw se 26-19n-8w, rig.

NEW YORK

COMPLETIONS

Allegany County—South Bolivar Oil Co., McKelvey farm, Bolivar, 6 bbls, Richburg, 1090 ft. New York Oil Co., Brown farm, Bolivar, 7 bbls, Waugh-Porter, 1382 ft. E. L. Clark et al, Jennings farm, Bolivar, 5 bbls, Richburg, 1247 ft. Lee Harder, McAllister farm, Scio, 5 bbls, Richburg, 1183 ft. M. W. Reynolds et al, Holtum farm, Scio, 6 bbls, Richburg, 1042 ft. Hardy & McBride, Garthwaite farm, Alma, 8 bbls, Richburg, 1259 ft. Albert Oil Co., Witter farm, Alma, 7 bbls, Richburg, 1128 ft. Dick Oil Co., Bradley farm, Bolivar, 10 bbls, Richburg, 1410 ft. Cousins Oil Co., Roeske farm, Wellsville, 7 bbls, Fulmer, 1364 ft. Scott & Sackinger, Scott farm, Bolivar, 9 bbls, Waugh-Porter, 1426 ft. Bradley Prod. Corp., Coats farm, Wirt, 6 bbls, Richburg, 1340 ft. Sawnet Oil Co., Merritt farm, Genesee, 6 bbls, Richburg, 1417 ft.

INTAKE WELLS

Allegany County—Messer Oil Co., Vosburg farm, Bolivar, Richburg, 1359 ft. Bradley Prod. Corp., Sprague farm, Alma, Richburg, 1241 ft. W. J. Richardson 3, Gadsby farm, Bolivar, Richburg, 1391 ft. Conklin & Reeland, Swarthout farm, Wirt, Richburg, 1256 ft. Star Oil Co., Neff farm, Bolivar, Richburg, 1278 ft. The Otsquago Corp., Pike farm, Alma, Richburg, 1377 ft. W. O. Taylor Est., Coyle farm, Alma, Richburg, 1233 ft. Marsh Oil Co., Fay farm, Bolivar, Richburg, 1389 ft. Howard Gowdy et al, Frederick farm, Alma, Fords Brook, 1354 ft. Bliven Hill Oil Co., McEwen-Norton farm, Amity, Scio, 961 ft.

OHIO

COMPLETIONS

Coshocton County—C. A. Davis et al, Rhine 2, 0.21 gas, 3146 ft.

Knox County—Ohio Fuel, Staats 1, 0.02 gas, 2980 ft.

Licking County—Allen Willey, Griffith 1, 0.1 gas, 2414 ft.

Meigs County—J. L. Skinner, Engle 1, 0.23 gas. New Southern Ohio Gas Co., Krider 1, 1.0 gas, 3310 ft.

Monroe County—Driggs Oil Co., Drake 3, 0.08 gas, 1920 ft.

Noble County—Metcalf & Co., Masters 14, 3 bbls, 1025 ft. F. W. Fassett, Hayes 7, abnd 250 ft.

Summit County—Wiser Oil Co., Stouffer 1, 35 bbls, 2098 ft.

Washington County—Columbia Carbon Co., Augenstein 1, abnd 4443 ft. Cline & Hall, Hall 3, 0.05 gas, 1136 ft.

OLD WELL DRILLED DEEPER

Meigs County—Roy Proffitt, Krider 4, 0.2 gas, 3198 ft.

PENNSYLVANIA

COMPLETIONS

Armstrong County—John Wray et al, Nelson 1, 0.13 gas, 3502 ft. Shelocta Oil & Gas Co., Graff 1, 0.18 gas, 3737 ft.

Fayette County—Fayette County Gas Co., Marcinick 1, abnd 2408 ft.

Greene County—Peoples Nat. Gas, Lemley 1, 0.03 gas, 3342 ft.

OLD WELLS DRILLED DEEPER

Greene County—H. D. Freeland et al, Kent heirs, abnd 3300 ft. Union Gasoline & Oil Corp. Post 1, abnd 2878 ft.

WEST VIRGINIA

COMPLETIONS

Boone County—South Penn, Yawkey-Freeman 70, 8 bbls and 0.23 gas, 2451 ft.

Calhoun County—South Penn, Rothlisberger 5, 10 bbls, 1875 ft.

Jackson County—West Va. Gas Corp., Monday 1, 4.78 gas, 5085 ft. Spartan Gas Co., Burnem 1, 8.72 gas, 5270 ft.

Kanawha County — South Penn, W. H. O'Dell 1, 0.39 gas, 1734 ft. Columbia Carbon Co., Fields 2, abnd 1479 ft.

Logan County — Boone County Coal Co., Fee 22, 1.0 gas, 2280 ft.

Putnam County—Hogan Gas Co., Ellis 1, 0.02 gas, 2431 ft. United Fuel, May 5078 ft, 0.5 gas, 3612 ft.

OLD WELL DRILLED DEEPER

United Fuel, Adkins 4414, 0.15 gas, td 3648 ft.

Men In The Industry's News

P. H. PATCHIN, a director, has been named a vice president of Standard Oil Company of California and assigned to new activities, mainly in Washington, D. C., the company has announced. He has been director of public relations for the company at San Francisco for many years.

HOWARD COONLEY has been appointed chief of the simplification branch of the Bureau of Industrial Conservation, War Production Board. Coonley, chairman of the board of Walworth Company, replaces Dr. Edwin W. Ely, who recently was called back to his post as chief of the division of simplified practice of the National Bureau of Standards.

E. E. ROBBINS of OPC discussed "Priorities for the Oil Industry" before the Seminole, Oklahoma, chapter of the American Petroleum Institute March 23.

LAWRENCE S. REED has been elected vice president succeeding Fred W. Dumraese of Texas Gulf Producing Company, Houston. Dumraese was killed recently in an automobile accident. Officers re-elected are Gordon W. Reed, president; William H. Hendrickson, secretary-treasurer; T. S. Taliaferro, assistant secretary. Directors include these four officials and Clarendon E. Streeter, Bradford, Pennsylvania; George E. Farenthold, Corpus Christi; Roland L. O'Brian, Buffalo, New York.

L. E. DELCUZE, assistant to the vice president and assistant secretary of Gulf Oil Corporation; N. E. Perry, superintendent of the pipe line division; C. H. Stevens, assistant treasurer; and M. E. Garrett, tax renditionist, Houston, last week were presented pins for having completed 35 years of service with the company. There are 2496 Gulf employes throughout the country who are receiving awards for having served continuously from 10 to 40 years with the company.

E. O. BUCK, Office of Petroleum Coordinator, will discuss the priorities situation at a special meeting for members of the oil industry to be held in the Plaza Hotel, San Antonio, at 7:30 p. m., March 31. While the meeting is sponsored by the South Texas Geological Society, it is being opened to all interested, and members of the industry have been requested to attend.

HERBERT ALLEN has been elected a vice president of Cameron Iron Works, Inc., Houston, effective February 17. In his new position Allen exercises executive supervision over engineering, inspection, and manufacturing. In addition to his duties with Cameron Iron Works, he will continue as chief engineer of Abercrombie Pump Company.

Allen received a B.S. degree in Mechanical Engineering from The Rice Institute in 1929. He entered the employ of Abercrombie Pump Company in 1931 and was made chief engineer of Cameron Iron Works in 1935.

W. T. SCHNEIDER, West Texas geologist for Hononlulu Oil Corporation, addressed the Permian Basin Engineers Association March 19 at Midland on "The Geology of the Wasson Field and Its Relation to the Permian Basin."

DAVID M. LOGAN of Oklahoma City, who formerly was with the petroleum machinery section of the War Production Board in Washington, has recently been transferred to the Office of Petroleum Coordinator and assigned to field duty with headquarters at Oklahoma City.

MARK D. JACKMAN, Illinois drilling and production superintendent for Bert Fields, Dallas, Texas, contractor and producer, with headquarters at Centralia, has reported for duty at Fort Benning, Ga. He has been a reserve army officer since graduating from Texas A. & M. College.

F. C. SEALEY, vice president of Colombian Petroleum Company, and J. P. McCulloch, assistant manager of foreign production, The Texas Company, are in South America. They are expected to return to New York next month.

E. S. BLEEKER, chief geologist of the New York Production Division of Gulf Oil Corporation, recently returned to New York following a trip to Venezuela and other South American countries.

E. J. GANN has joined the land division of Danciger Oil and Refineries, Inc., at Fort Worth. He formerly was land man for Red Bank Oil Co., Houston.

CHESTER J. BRADLEY, Texas Company scout in East Texas, has been appointed district land man at Tyler, Texas.

ODELL OLSON of Brady, Texas, has joined the Texas Railroad Commission as geologist.

JOSEPH G. HEYCK has resigned from the scouting and land department of the Humble Oil and Refining Company, and is now engaged in oil activities in Florida.

GEORGE SCHNEIDER of the Texas Company, New Orleans, recently addressed the Shreveport Geological Society on "Discussion of the Rate of Discovery of Fields in South Louisiana."

H. H. COLLETON has been promoted to district foreman for Stanolind Pipe Line Company at Wink, Texas. He formerly was chief gauger.

FRANK DAVIS has been transferred from South Texas to El Dorado, Arkansas, as superintendent of the gas pipe line department of the Lion Oil Refining Company.

DR. WALTER H. BUCHER, Columbia University, addressed Tulsa Geological Society last week on "Origin of Ocean Basins and Submarine Canyons," "Geosynclinal Belts and Orogeny," and "Magmatic Movement in Crustal Deformation."

C. H. KEPLINGER, production engineer recently transferred to the Tulsa office of Shell Oil Company from Kansas, has been transferred to the division office in Centralia.

DR. O. F. EVANS, University of Oklahoma, spoke before Shawnee Geological Society on "The Origin of Beach Structures."

HARVEY ABSHIRE, purchasing assistant, Sun Oil Company, has been transferred from the Tulsa office to Dallas.

J. A. TRAUGHBER, superintendent, Transwestern Oil Company, has been transferred from Hutchinson, Kansas, to Oklahoma City.

DR. J. W. MERRITT, president, Geochemical Service Corporation, assisted by Michael DiCesaro, chemist and Jack Huffmyer, geologist, with the same company, discussed soil analysis and geochemical prospecting before Engineers Club of Tulsa.

C. W. ELLISON, consulting geologist of Cushing, has joined the staff of Helmerich & Payne, Inc., Tulsa.

CLAUD B. HAMILL, Houston oil man and director of the defense stamp sales campaign in Harris County, Texas, has been elected to the board of directors of the City National Bank, Houston.

D. D. UTTERBACH of The Texas Company, New Orleans, talked on "Studies of Asphalt Bearing Surface Outcrops in Relation to Porosity and Origin of the Bituminous Materials" before the Houston Geological Society March 26. Walter H. Bucher, professor of geology, Columbia University, will speak at a special meeting of the society at the University of Houston at 8 p. m. March 30. His subject will be "Mechanics of Crustal Deformation."

THOMAS PENNINGTON, Humble Oil & Refining Company engineer recently stationed at Tomball, has reported for duty with the Army engineers as first lieutenant.

H. K. BROWNING has been appointed division manager in charge of Kobe, Incorporated's Mid-Continent activities. The appointment was announced by C. M. Rader, recently appointed general sales manager of Kobe, Incorporated. Browning, who was previously division sales manager, will have charge of Kobe, Incorporated's entire

advertising and promotional program in connection with the company's products.

Before joining Kobe, Incorporated in 1940, Browning attended the School of Engineering at Cornell University, after which he joined A. M. Byers Company of Pittsburgh where he was active in technical sales work, holding at the time he severed his connection with this company the position of manager of oil country sales with headquarters in Pittsburgh. Interest in pumping and corrosion problems caused his association in 1934 with the S. M. Jones Company as sales manager, in which position he was active for five years.

Browning will continue his headquarters at Oklahoma City in the company's division offices and shop.

DR. A. M. PAXSON, dean of the School of Business Administration and Director of the Downtown College of the University of Tulsa, addressed the Petroleum Accountants Society of Tulsa March 26.

KIRBY T. PENICK, 45, secretary-treasurer of Oil Center Tool Company, Houston, died March 25. He was born at Velasco, Texas, and had lived in Houston 40 years. He was a member of the Purchasing Agents Association, Masonic Lodge, Scottish Rite bodies and Arabia Temple Shrine.

GERRITT JOHN VANDER LYN. at one time president of the Socony-Vacuum Oil Company of Prague, Czechoslovakia, died at Houston March 25. In recent years he was an executive of W. R. Davis and Company until his retirement in 1941.

LOU DENNIS COFFEY, 64, drilling contractor, died March 21 at Fort Worth, Texas, where he had resided more than 20 years, having previously lived at Beaumont.

Letters to the Editors

Exploration Director

SIRS:

The No. 1 article in your March 16 issue entitled "Why not a Director of Exploration" and concerning Doctors Rosaire and De Golyer is too absurd to warrant the use of company time and equipment for answering, yet I am moved to make some personal comments as requested. Naturally I wish that my name and company connections be withheld by you. This is written informally from home and it's very late.

My only hope and comfort in the face of articles of this type is that practical men who know the operating score and who are responsible for *performance* as well as *theories* will continue to carry on in the practical manner.

I have found as many if not more oil fields and millions of barrels of reserves as De Golyer. For a number of reasons, I belong to the group of discoverers who have not been as famous as he. I would resist the placing of any or all of the oil discovering geologists, including De Golyer, in charge of the country's exploration job. He can't handle it and neither can I, nor any of the rest of us.

Even if any of us should be foolish enough to think we could, Rosaire should know that "directors" and "committees" are solving few real problems for industry today. It's the industry folks themselves who are tightening their belts and doing the real work.

Dr. Rosaire is an eminent scientist, specializing in geophysics and geochemistry. Many of his fellow scientists do not agree with him from a practical standpoint. What would he do if he were "Director of Exploration for the U. S."?

What have the eminent scientists of the U.S.G.S. done in the way of finding oil? They have hundreds of men, lots of equipment, lots of fee-owned land, a real incentive for discovery, and what is the score?

There's no substitute for the system of free, competitive enterprise and, above all things, this applies to the exploration for oil. Most of the prospects which pay off seem foolish to most geologists. It's usually only the parents of a prospect and a few liberal intimates who think the new baby has possibilities. What would a "Director of Geological Prospects for the U. S." do with those plays he doesn't like? Would he be "smart" enough to throw them out and save steel. This was the conclusion of most geologists with respect to East Texas, Coalinga Nose, Coles Levee, Ten Section, Wilmington and Signal Hill.

It just won't work in spite of the theorist's theory. It would be just like setting up one man to pass on the merits of all patents, or on the merits of chemical, medical or mechanical research.

Do you suppose we would enjoy the technological wonders of today if all of the "impossible" things had to come out of one research laboratory? Suppose we had some technically correct folks designing the automobile between 1920 and 1940—exclusive directors of research and design for the U. S.? I believe it goes without saying that even Kettering would not have made the Buicks and Cadillacs so good if it had not been for the "crazy" competition of Chrysler.

No, you cannot direct the exploration effort autonomously—any more than you can direct the play in a poker game. It takes something else.

We've got what it takes in organization, willingness and momentum. It's a gamble which must be played "high, wide and handsome" in order to win, and win we can. It might only be improved if the scientific theorists would more generally work with and for the practical men who are directly responsible for performance."

—F. M.

Illinois View

SIRS:

I have read Mr. Rosaires' suggestions with a great deal of interest, and particularly approve his suggestion that Mr. De Golyer be selected to coordinate oil prospecting for something must be done quickly to encourage prospecting all over the nation but particularly in Illinois, provided, of course, that new fields are desirable in Illinois.

Illinois has been damned for its stand on conservation, but that is an academic question at this time. (A careful reading of Stanley Herold's new work, *Oil Well Drainage,* should convince some of our rabid conservationists that Illinois after all wasn't anywhere near as sinful as it was painted.) However, the issue is not conservation in Illinois but the finding of new fields. Mr. Ickes states that Illinois at its present rate of production will produce 40 percent of its oil reserves in 1942. There is no sense in arguing that this is a ridiculous fallacy.

Oil is needed in Illinois and only two new fields have been discovered in the past three months when half a dozen should

Officers for 1942 were recently elected by the Tulsa Chapter of Nomads. They are, left to right, Paul Fitzgerald, Dowell, Inc., vice president; W. C. Green, Engineering Laboratories, Inc., regent; C. O. Willson, Oil and Gas Journal, president; H. M. Cosgrove, Purchasing Agents Association of Tulsa, secretary-treasurer; Fred E. Cooper, Allis-Chalmers Manufacturing Company, regent.

have been found. What has happened to cause such a decline in the rate of discovery is a natural query? The answer as I see it, lies in the way that Illinois wildcat wells are financed, and the unfortunate results that 40-acre spacing has had on such financing.

In Illinois, as in other states, the smaller operators have opened most of the new oil fields. However, in other states many oil producers are financially in good shape which is not so generally the case with the Illinois operators, most of whom depend upon the general public to help in financing the drilling of new wells. It is true that the operators sell some acreage to the major oil companies and some to other operators, but in the main, the public bears most of the expense. This type of money raising has been hard hit largely due to the 40-acre spacing regulation. However wise that regulation may prove elsewhere, it is definitely a deterrent factor in new development in Illinois.

Ten-acre spacing has been the basis of financing in Illinois. Considering the lenticular sands and the quick changes in limestone porosity in Illinois, some of the operators feel that they will fare better in other states than to try to produce in Illinois, especialy when the financing situation is so stiff. This may be only a temporary situation, but it is definitely having an effect on checking prospecting at this time.

Some incentive must be found to stimulate prospecting in Illinois. It does not matter how patriotic an oil operator may be, if he has only $5000 and a well costs $15,000, he must raise the additional money somewhere or not drill. If the public won't join in putting down the wells, the new wells won't be drilled unless the major oil companies supply the funds or the money comes from federal sources.

This is my analysis of the Illinois situation and it will not change nutil someone who understands the local situation does something to encourage prospecting. A federal coordinator of prospecting should be able to solve this problem.

This is no reflection on Mr. Wirt Franklin who has his hands full with a hundred problems dealing with all phases of the oil industry and has no time to devote to one branch of the business.

DORSEY HAGER,
Centralia, Illinois.

Concrete Storage

SIRS:

Mr. Dudley's analyses of the oil situation and outlook, as printed in the last several issues of THE OIL WEEKLY, certainly have been masterful. It looks as if we either would have to store a great deal of ordinary gasoline, or burn it up.

How about concrete storage? I remember that along about 1928 the Shell built a great deal of concrete storage at Monahans, for Hendrick and other West Texas crudes. Would concrete storage be suitable for gasoline? Even if inferior to steel, it would be better than nothing, and we apparently have war demands for every possible ton of steel capacity.

If concrete storage is practical you gentlemen could be doing both our country and the oil industry a service by urging it vigorously and at once.

E. D. MCMAHON,
San Antonio.

So far as we know, concrete storage has not been used on any extensive scale in the handling of gasoline. The subject is interesting and THE OIL WEEKLY will be glad to develop any further information possible.

Squeaks from the Bull Wheel

Correct Count

An inquisitive friend called on her recently widowed neighbor, and soon got on to the subject of what her husband had left her.

"As your husband died intestate, you will, of course, get a third," the caller suggested.

"No, I hope to get a fourth," was the prompt reply. "He was my third husband you know."

Clean Girl

The gentleman stopped to talk to the wee girl who was making mud pies on the sidewalk.

"My word," he explained, "you're pretty dirty, aren't you?"

"Yes," she replied, "but I'm prettier clean."

Service

"I ordered a dozen oranges, but you only sent me ten."

"Part of our service, madam. Two were bad, so we saved you the trouble of throwing them away."

Poor Advice

Hey, an' how do you get down from up here?

You fool, come down the same way you went up.

Not on your life. I came up head first.

Unfair

"Doctor, how do you tell if a person is insane?"

"Oh, we merely ask him a few ordinary questions which ordinary people can answer correctly."

"What type of question?"

"Well, this is the sort of thing: Captain Cook made three voyages around the world, and died on one of them. Which was it?"

"I think that's a bit steep. I'm not very good at history."

Sculptor, Desist!

Ralph Waldo Emerson manifested a whimsical modesty toward himself which was truly delightful. Once he favored Daniel C. French, the noted American sculptor, with a number of sittings for a bust, which now reposes in Memorial Hall, Harvard University. One day when the work was well advanced, the New England author suddenly walked over to where the sculptor was working, looked long and earnestly at the bust, and said, "Mr. French, I hope you will soon have this job done."

"Why, Mr. Emerson?" inquired the sculptor.

"Because," replied Emerson with a droll expression, "it is getting to look more like me every day, and the more it resembles me the worse it looks. I don't think I can stand it much longer."

Hard to Please

At the end of the first year the son came home in high feather. He stood second in his class.

"Second," said the father, "second? Why didn't you stand first? What do you go to college for?"

The young man returned for his second year, determined to win first place. At the end of the year he returned home and announced his success.

The father looked at him for a few minutes in silence, then shrugged his shoulders, and said: "At the head of the class, eh? Well, it can't be much of a college, after all."

Wight!

"Mr. Dumgard, what is a twip?"

"A twip, sir, is a wide on a twain."

Drunk Story

"Fred, there's someone creeping upstairs."

"Whazza time?"

"Half-past three."

"Well, thank goodness, it's not me this time."

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Notes for the Equipment Buyer and User

Control Valve

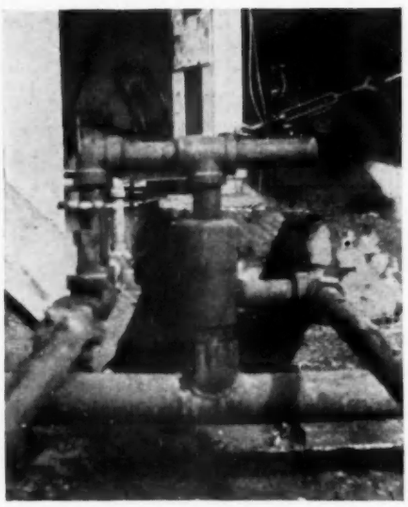
WARREN AUTOMATIC TOOL COMPANY

Warren Automatic Tool Company, Houston, Texas, has announced an automatic valve to stop or start the flow of water going into the mud stream the instant mud circulation is stopped or started.

This valve is designed to aid in keeping the mud weight and viscosity uniform and saving money on weighting material and time.

During shutdown periods, the possibility of forgetfulness or negligence to stop the water running in the mud ditch is eliminated. It also gives assurance that the correct proportion of water will be resumed the instant circulation is restored.

The valve is compactly built, being only 12 inches in length and 5 inches in diameter. There is a 2-inch pipe connection in the top for the water to enter and one in the side for the outlet to the mud ditch. At the botom, is a 4-inch threaded male connection for attaching the valve directly to the mud line from the pumps. Within the body of the valve at its mud end is a 3-inch mud piston. This piston acts directly against a water valve disc, which is normally held closed by a spring. A tough rubber insert assures a positive water shutoff. The interior of the valve is so constructed to provide an unrestricted 2-inch flow of water. The pressure from the mud pumps operating against the mud piston, and in turn the water valve disc, opens same and permits the water to flow through the valve. As the mud pressure is released, the spring acts to return the valve to its normally closed position.

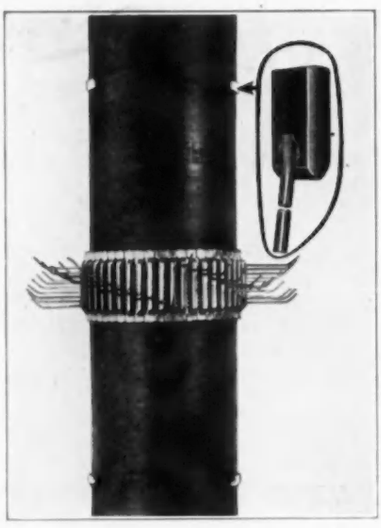


Warren Control Valve.

Welding Blocks

B AND W, INC.

B and W, Inc., Houston, and Long Beach, California, announce development of welding blocks for B and W wall-cleaning-guide installations. Use of these blocks speeds up the casing operation.



B & W Welding Block.

Blocks are spaced 14 inches apart vertically, and are welded to the casing to restrict the travel of the wall-cleaning guides, but still allow sufficient travel to release the slips without scratching as each joint is run. The blocks are 3/16 x 3/8 x 3/4 inches long, with a wire handle which is cut off with the arc as each block is welded to the casing.

The wall-cleaning guides are packed three to the carton, and six welding blocks per guide are furnished.

Equipment Group Gets Report on Objectives

At the meeting of the Association of Well Head Equipment Manufacturers at Houston, March 17, the usual business of the association was accomplished, which included committee reports on objectives, in conformance with instructions of the membership at the last regular meeting.

In line with the government program of conservation of materials, the committee report on objective No. 20 (standardization) was of major importance. This report carried recommendations that immediate steps be taken toward the simplification of Christmas trees and other parts comprising well head equipment, thus assisting in the government program as it is outlined. This recommendation was unanimously approved by the membership and the chairman, C. L. Cron, was instructed to appoint a subcommittee to study this subject carefully and submit its report to the parent committee for further action, at the earliest possible date.

Also receiving the approval of the membership were the booklets just completed, in which the work of committees and action by the membership were outlined. The A.W.H.E.M. booklet outline the "terms and definitions" applying to well head equipment and the "Code of Recommended Practices on the Pressure Testing Certification of Well Head Equipment."

In connection with the activities of the association, the booklets are available for distribution and will be mailed upon request by Association of Well Head Equipment Manufacturers, 508 Niels Esperson Building, Houston.

Fluorograph Exploration Company Organized

Fluorographic Exploration Company, Inc., has announced the opening of offices at 1517 Second National Bank Building, Houston, Texas.

The company was organized to serve the oil industry in the search for new oil reserves. The process used is a new scientific method of locating oil accumulations and of logging bore holes.

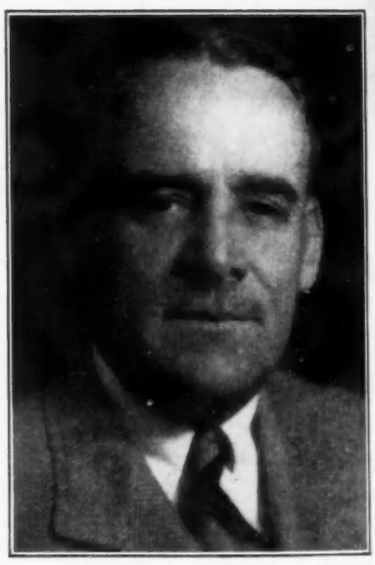
Reconnaissance surveys may be made over large areas for as little as 3 cents per acre, it is said. Detail work may be done for as little as 10 to 15 cents per acre. The well logging of bore holes by using bit samples has been worked out at an extremely low price also. Logging will indicate all showings encountered in the well, as well as indicate whether there is a possibility of deeper producing sands.

W. B. Ferguson is president of the company.

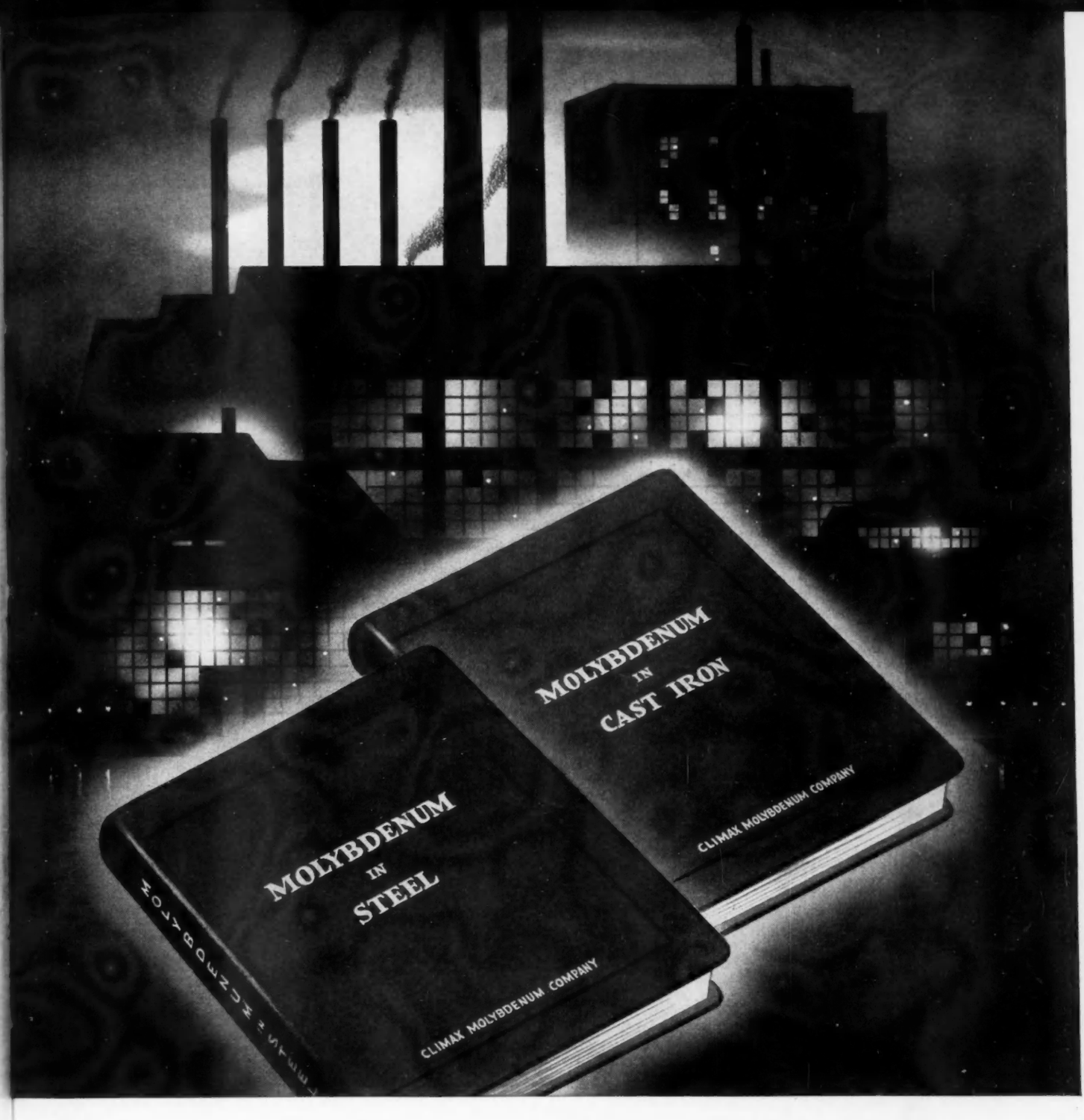
New Appointments for Fitzpatrick And Tyer of Continental Supply

The Continental Supply Company announces appointment of W. G. Fitzpatrick as district manager of the Houston branch. Fitzpatrick takes the place of F. H. Thrailkill, who has retired.

Fitzpatrick has had a long and extensive career in the oil-well supply business. After studying engineering at Car-



W. G. FITZPATRICK



PRACTICAL DATA FOR PRESENT PROBLEMS

Here are two books designed to help users of Molybdenum steels and irons to conserve all alloying elements, and possibly steel and iron, by getting the most in the way of strength, toughness and wear resistance with the lowest alloy content.

"MOLYBDENUM IN STEEL" covers the fundamental metallurgy of Molybdenum steels. Heat treatment – physical properties – applications – of a number of these steels are treated at length.

"MOLYBDENUM IN CAST IRON" covers the effect of Molybdenum in gray iron, giving suggested analyses for practical applications and detailed discussion of high strength (60,000 p.s.i. and up) irons.

Both books will gladly be sent free on request.

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DO YOU NEED PIPE?

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For economical casing pulling call YORK. Modern portable equipment enables us to move on location and complete the job quickly at a saving.

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40 Pounds of JUNK RECOVERED by CAVINS!

Yes, we got several rock bit cones, a piece of slip segment and a ball peen hammer, then broke up and recovered a bridge plug . . . all from this hole, with the Cavins Automatic Hydraulic Suction Bailer. Jobs like this are all in a day's work with Cavins.

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CAVINS OIL WELL CLEANOUT TOOLS

E. E. TYER

negie Institute of Technology in Pittsburgh, he served as an officer in the Marine Corps during World War I. In 1919 he became associated with The National Supply Company by whom he was employed until 1928. He then joined the sales staff of Emsco Derrick & Equipment Company and was subsequently promoted to sales manager in charge of Emsco activities in the Mid-Continent. In 1933 he became a sales representative for The Continental Supply Company with headquarters in Houston. In 1939 he was made manager of sales with headquarters in Dallas, where he served until his present appointment.

E. E. Tyer has been advanced to assistant district manager at Houston for The Continental Supply Company.

Tyer's oil-field experience dates back to 1919 with The Standard Oil Company in northern Louisiana where he started after serving 18 months in World War I. From 1919 until 1931 he was with Oil Well Supply Company as manager at Shreveport, Louisiana. He later was appointed district manager at Shreveport and Houston.

He joined The Continental Supply Company in 1931 and has been serving in Houston since then.

Wellman Named B and W Distributor

B and W, Inc., of Houston, has appointed Wellman, 405 West First Street, Odessa, Texas, as its distributor for wall cleaning guides in West Texas and New Mexico.

W. J. Wellman

In addition to carrying complete stocks of this equipment, Wellman will furnish service, without additional charge, to assist operators in establishing proper guide placement when installing on the rig, and throughout the cementing operation.

Advertisers' Index

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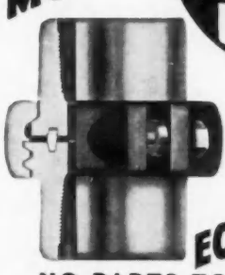
SAVE TIME AND MONEY with Red-Rex QUICK-JOINT PIPE UNIONS



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NO PARTS TO GET LOST AND CAUSE DELAY

OIL CITY BRASS WORKS
FOUNDERS · MANUFACTURERS · MACHINISTS
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To put more "drive" in production–

A NEW BLACK

E-C CORD MULTI-V BELT

–the most efficient V belt ever built!

AFTER years of testing in the field Goodyear announces a major improvement in its famous E-C Cord Multi-V Belt – an advance that sets a new standard in V belt efficiency.

Now this time-proved belt is sheathed with a new, tougher, *black* cover that insures longer wear, more uniform pull and higher resistance to heat, oil and other enemies of long belt-life.

More uniform pull and better balanced performance result from the fact that it is possible to build this new black cover with a more consistent coefficient of friction, essential to a balanced drive.

No relaxed cords — none overtaut

Add to this the patented Goodyear "COMPASS" Cord construction that concentrates the load-carrying cords in the neutral axis where all pull evenly, without uneven stresses – and it is easy to understand why this new belt delivers higher efficiency on multi-V drives.

The new black E-C Cord Multi-V Belt is made in all standard cross-sections and lengths – sold in sets precision-matched under operating tensions. Order from your Goodyear Mechanical Rubber Goods Distributor.

1—Heavy, super-tough black cover with uniform friction, longer life.

2—Tension Section.

3—Neutral plane with heavy endless load-carrying Compass cord.

4 — Compression Section.

5—Insulating Gum.

FREE MANUAL—"INDUSTRIAL RUBBER PRODUCTS CONSERVATION" *prepared by the G. T. M. — Goodyear Technical Man. Full of valuable aids on making rubber goods wear longer. Write Dept. A-11, Goodyear, Akron, Ohio.*

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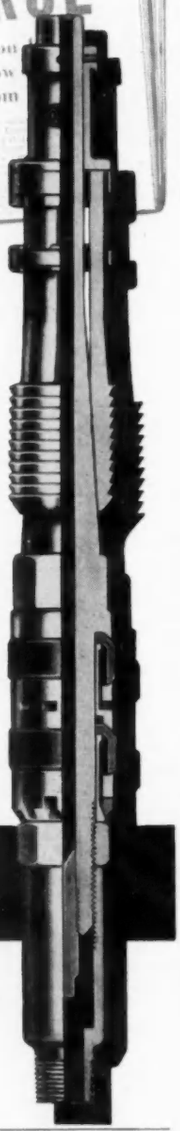
PRODUCTION NEWS
TIMELY FACTS ABOUT SUB-SURFACE CONTROL
Increased Production When Rate of Flow trolled From Bottom
In Smith Field
Tests Are Made

with an

OTIS **TYPE B REMOVABLE BOTTOM HOLE CHOKE**



- **Freezing of Surface Controls is positively eliminated.** With the point-of-control moved to a Sub-Surface level the higher bottom hole temperature offsets drop in temperature due to gas expansion. The tubing string acts as a heat exchanger—eliminating need for surface heaters.
- **Water encroachment is retarded by maintaining steady flow.** With the well choked at Sub-Surface levels, constant bottom hole pressures are maintained—retarding water encroachment and prolonging the flowing life of the well.
- **Reduces High Surface Flowing Pressure** to safe working limit.
- **The Type B Otis Removable Bottom Hole Choke** can be run into the tubing, under pressure, on an ordinary steel measuring line. It can be set at any depth desired and can be removed without pulling tubing.

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MADISON AT 50TH - NEW YORK CITY
T. A. PRICE, Manager

LOOKING AHEAD
. . . with the Editor

Central Mud Plant Serves Marine Drilling Fluid

An oil company having several rigs running in marine fields of Coastal Louisiana operates a centrally located mud plant, manufacturing and storing drilling muds for shipment to rigs. Especially constructed barges, designed for containing mud, are provided to transport the drilling fluid to rigs, and additional storage facilities at the terminal enable operators to save expensive chemical and heavy muds upon completion of wells by bringing them in on barges for temporary storage.

Products of the plant consist of light muds or clays, used in drilling shallow or low-pressure wells, or for upper portions of tests which are drilled in the coastal area. Mobility of the mud-delivery barges allows rapid transport to rigs, and appropriate pumps for emptying tanks, moving mud, and transferring it to drilling barges are provided to expedite the procedure.

Mud is removed from a shallow excavation which is served by a conveyor system about 400 feet long. Mud placed on the lower end of an endless belt is carried to a grinding and mixing mechanism, where it is reduced to small particles by rotating knives and jetting water, and it is then mixed in proper proportions to assume the desired weight and viscosity. Correctly mixed mud is then pumped into storage tanks having a combined capacity of 4800 barrels. Loading on barges is accomplished partly by gravity, although booster pumps are provided, with a manifold allowing control of flow.

Initial investment, in addition to cost of mud production, is low, with operational expense kept at a minimum by staggering operations as needed. Economy of the system, as well as details of the mud pit and machinery, will be described in a complete and well illustrated article appearing in an early issue of THE OIL WEEKLY.

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